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<110> Tang, Y. Tom  
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Wang, Jian-Rui  
Zhou, Ping  
Ma, Yuning  
Wang, Dunrui  
Wang, Zhiwei  
Tillinghast, John  
Drmanac, Radoje T.

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Ser Pro Asn Gly Asn Leu Ile Arg Met Leu Val Leu Phe Phe Leu Glu	
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Ser Glu Leu His Glu His Ala Ala Tyr Leu Val Asp Ser Leu Trp Glu	
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Ala His Pro Pro Val	Gly Arg Gly Thr Gly	Lys Arg Val Leu Thr Ala		
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Phe Ile Ile Thr Leu	Pro Met Leu Leu Ser	Lys Tyr Ser Ala Asp Ala		
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Glu Lys Val Ala Asn	Leu Leu Gln Ile Pro	Gln Tyr Phe Asp Leu Glu		
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Ile Tyr Ser Thr Gly	Arg Met Glu Lys His	Leu Asp Ala Leu Leu Lys		
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Ala Cys Ser Lys Thr	Tyr Ser Ile Leu Cys	Ser Glu Glu Tyr Thr Ile		
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Asp Arg Phe Asn His	Ser Val Glu Asp Leu	Leu Gln Glu Gly Glu Glu		
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Thr Ser Phe Gln Asn	Ala His Asp Leu Thr	Lys Trp Asp Leu Phe Gly		
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Asn Cys Tyr Arg Leu	Leu Lys Thr Gly Ile	Glu His Gly Ala Met Pro		
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Glu Gln Ile Val Val	Gln Ala Leu Gln Cys	Ser His Tyr Ser Ile Leu		
731	736	741	746	



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tct gaa ctc ctc agt ttt gtg atg gat cac gtt ttt att gac caa gac Ser Glu Leu Leu Ser Phe Val Met Asp His Val Phe Ile Asp Gln Asp 827                                832                                837                                842	3026
gag gag aac cag agc atg gag ggt gat gaa gaa gat gaa gct aat aaa Glu Glu Asn Gln Ser Met Glu Gly Asp Glu Glu Asp Glu Ala Asn Lys 843                                848                                853                                858	3074
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Phe Leu Glu Val Leu Ser Glu Phe Ser Ser Lys Leu Leu Arg Gln Asp	
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Lys Lys Thr Val His Ser Tyr Leu Glu Lys Phe Leu Thr Glu Gln Met	
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1035 1040 1045 1050	
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Leu Asn Arg Thr Asp Thr Met Ile Gln Thr Pro Gly Pro Leu Pro Ala	
1099 1104 1109 1114	
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Asp Gln Ile Gln Glu Pro Glu Ser Glu His Gly Ser Glu Pro Asp Phe	
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Ala Pro Leu Val Ala Pro Ser Pro Gly Lys Ala Glu Ala Ser Ala Pro	
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Glu Ser Ala Ala Thr Ser Lys Arg Ala Pro Pro Glu Val Thr Ala Ala	
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1941

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Arg Ala Val Ile Leu Asp Leu Leu Gln Glu Ala Leu Thr Glu Ser Gly	
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Leu Thr Ser Gln Asp Ile Asp Cys Ile Ala Tyr Thr Lys Gly Pro Gly	
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322

327

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&lt;222&gt; (120)..(1394)

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 Arg Arg Glu Thr Phe Val Leu Lys Asp Ser Pro Val Arg Asp Leu Leu  
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Pro Thr Val Asn Ser Leu Thr Arg Ser Thr Pro Ser Pro Ser Ser Leu	
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Thr Pro Arg Leu Arg Ser Asn Asp Arg Lys Gly Ser Val Arg Ala Leu	
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Gly His Phe Lys Ala Val Ile Pro Ser Ile Ser Leu Gly Lys Glu Ile	
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Trp Leu Ser Leu Ala Thr Leu Val Leu Ile Cys Ala Gly Gln Gly Gly  
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cgc agg gag gat ggg ggt cca gcc tgc tac ggc gga ttt gac ctg tac 446  
Arg Arg Glu Asp Gly Gly Pro Ala Cys Tyr Gly Gly Phe Asp Leu Tyr  
31 36 41 46

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Phe Ile Leu Asp Lys Ser Gly Ser Val Leu His His Trp Asn Glu Ile  
47 52 57 62

tat tac ttt gtg gaa cag ttg gct cac aaa ttc atc agc cca cag ttg 542  
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63 68 73 78

aga atg tcc ttt att gtt ttc tcc acc cga gga aca acc tta atg aaa 590  
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79 84 89 94

ctg aca gaa gac aga gaa caa atc cgt caa ggc cta gaa gaa ctc cag 638  
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Phe Tyr Ser Glu Arg Glu Ala Asn Arg Ser Arg Asp Leu Gly Ala Ile  
159 164 169 174

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175 180 185 190

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Ser Leu Lys Lys Gly Lys Thr Pro Pro Val Ala Val Thr Ser Pro Ile  
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Gly Ser Ala Thr Leu Ser Lys Ile Gln Lys Ser Ser Gly Ile Pro Val  
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Leu Tyr Ser Gly Ser Gln Met Gly Ser Thr Leu Ser Leu Ala Glu Arg				
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Pro Lys Gly Met Ile Arg Ser Gly Ser Phe Arg Asp Pro Thr Asp Asp				
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gtt cac ggc tca gtg ctg tcc ctg gcc tcc agt gcc tcc tcc acc tac				2323
Val His Gly Ser Val Leu Ser Leu Ala Ser Ser Ala Ser Ser Thr Tyr				
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tcc tca caa atc cgg aag ctt cgt agg gaa ctg gaa tca tcc cag gaa				2371
Ser Ser Gln Ile Arg Lys Leu Arg Arg Glu Leu Glu Ser Ser Gln Glu				
580	585	590	595	
aaa gtg gcc acc ttg acg tct cag ctt tct gcc aat gct aat ctg gtg				2419
Lys Val Ala Thr Leu Thr Ser Gln Leu Ser Ala Asn Ala Asn Leu Val				
596	601	606	611	

gct gct ttt gag cag agc ctg gtg aat atg aca tcc cgc ctg cga cac	2467
Ala Ala Phe Glu Gln Ser Leu Val Asn Met Thr Ser Arg Leu Arg His	
612 617 622 627	
ctg gca gag acg gcc gag gag aag gac act gag ctg ctg gat ttg cga	2515
Leu Ala Glu Thr Ala Glu Glu Lys Asp Thr Glu Leu Leu Asp Leu Arg	
628 633 638 643	
gaa acc ata gac ttt ctg aag aaa aag aac tct gag gcc cag gca gtc	2563
Glu Thr Ile Asp Phe Leu Lys Lys Lys Asn Ser Glu Ala Gln Ala Val	
644 649 654 659	
att cag gga gcc ctt aat gcc tca gaa acc aca ccc <sup>del</sup> aaa ggt agg aca	2611
Ile Gln Gly Ala Leu Asn Ala Ser Glu Thr Thr Pro Lys Gly Arg Thr	
660 665 670 675	
tcc agc cac aga ttg aga ggg aac agg gag cag gaa agt aag agt att	2659
Ser Ser His Arg Leu Arg Gly Asn Arg Glu Gln Glu Ser Lys Ser Ile	
676 681 686 691	
aca gat ttt tat ctg ggc cca tag tattccaagt cctatatcaa gtctctagaa	2713
Thr Asp Phe Tyr Leu Gly Pro *	
692 697	
ggtagagggcc tttagatacc ctttagtggtg atgtctggac tggtcagtga ggagtaccag	2773
gggcatgacc ccagcttcct agggcatgaa ggcaagcaga ggagacctgt aagccccagg	2833
ggtcctctcc ttaaccttta cctcacggcc aaagagccat caaagaccat cgttaaaata	2893
gccctttaca ttnttatgca aatgtgttgt gtgtccacac acacacaaac aatcttattt	2953
gacctcact ttagttctcc aactactctt ccaatganac aaccaaagct cacatagggt	3013
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gggttaattt cggagcagcc caggtggagg tcgagcccc aaccccgctc gcacctccag	180
gcttccgagg ccaccggaac ggaggagget tcggtggctc tttgtctacc tgctctgggt	240
gttaaagagc ccgctcgcag cctgcatcgc cggggctcgg gacagaagtc agcggcgggg	300
aaatggggct ctgtcacttt aagtacagct ggagccctgg gatgaaagca gctccatcag	360
tagtggactc agcgatgcct cagacaatct cagttcagaa gaattcaatg ccagctcctc	420
actcaactcc ctoccaaagta ctcccactgc ttctcgcagg aactcaacaa tagtgctacg	480
cacagactca tagaagcgct cactggcaga aagtgggctg agctgggtta gtgaatcaga	540
ggagaaaagcc cctaaaaaac tggagtacga cagtggtagc ctgaag atg gaa cct	595
	Met Glu Pro
	1
ggg act tct aag tgg cgg agg gag cgg cct gag agc tgt gat gat tca	643
Gly Thr Ser Lys Trp Arg Arg Glu Arg Pro Glu Ser Cys Asp Asp Ser	
4 9 14 19	
tcc aag ggt gga gaa ctg aaa aag ccc atc agc ctg ggc cac cct ggt	691
Ser Lys Gly Gly Glu Leu Lys Lys Pro Ile Ser Leu Gly His Pro Gly	
20 25 30 35	
tcc ctg aag aag ggc aag acc cca cct gtg gct gta act tcc ccc atc	739
Ser Leu Lys Lys Gly Lys Thr Pro Pro Val Ala Val Thr Ser Pro Ile	
36 41 46 51	
act cac aca gcc cag agt gcc ctc aaa gtc gca ggc aaa cct gag ggc	787
Thr His Thr Ala Gln Ser Ala Leu Lys Val Ala Gly Lys Pro Glu Gly	
52 57 62 67	
aaa gct aca gac aag ggt aag ctt gca gtg aag aat act ggg ctc caa	835
Lys Ala Thr Asp Lys Gly Lys Leu Ala Val Lys Asn Thr Gly Leu Gln	
68 73 78 83	
cgc tcc tcc tct gat gct ggt cgg gac cgc ctg agt gat gct aag aag	883
Arg Ser Ser Ser Asp Ala Gly Arg Asp Arg Leu Ser Asp Ala Lys Lys	
84 89 94 99	
ccc ccc tcg ggc att gct cgc ccc tcc act tcg gga tcc ttt ggc tac	931
Pro Pro Ser Gly Ile Ala Arg Pro Ser Thr Ser Gly Ser Phe Gly Tyr	
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Lys Lys Pro Pro Pro Ala Thr Gly Thr Ala Thr Val Met Gln Thr Gly	
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ggg tca gcc act ctc agc aag atc cag aag tcc tca ggc atc cct gtc	1027
Gly Ser Ala Thr Leu Ser Lys Ile Gln Lys Ser Ser Gly Ile Pro Val	
132 137 142 147	
aag cca gta aat ggg cgc aag act agc tta gat gtt tcc aac agt gca	1075

Lys	Pro	Val	Asn	Gly	Arg	Lys	Thr	Ser	Leu	Asp	Val	Ser	Asn	Ser	Ala		
148					153					158					163		
gag	cca	gga	ttc	ctg	gct	cct	gga	gcc	cgt	tct	aac	atc	cag	tac	cgc	1123	
Glu	Pro	Gly	Phe	Leu	Ala	Pro	Gly	Ala	Arg	Ser	Asn	Ile	Gln	Tyr	Arg		
164					169				174						179		
agc	ctg	ccc	cgg	cca	gcc	aag	tca	agt	tct	atg	agc	gtg	acc	ggc	ggg	1171	
Ser	Leu	Pro	Arg	Pro	Ala	Lys	Ser	Ser	Ser	Met	Ser	Val	Thr	Gly	Gly		
180					185					190					195		
cgg	ggt	gga	cct	cgc	cct	gtg	agc	agc	agc	att	gac	ccc	agt	ctc	ctc	1219	
Arg	Gly	Gly	Pro	Arg	Pro	Val	Ser	Ser	Ser	Ile	Asp	Pro	Ser	Leu	Leu		
196					201					206					211		
agc	acc	aag	cag	gga	ggc	ctt	acg	cct	tcc	aga	ctg	aag	gag	cct	acc	1267	
Ser	Thr	Lys	Gln	Gly	Gly	Leu	Thr	Pro	Ser	Arg	Leu	Lys	Glu	Pro	Thr		
212					217					222					227		
aag	gta	gcc	agt	ggg	cgg	acc	act	cca	gcc	cct	gtc	aat	cag	aca	gat	1315	
Lys	Val	Ala	Ser	Gly	Arg	Thr	Thr	Pro	Ala	Pro	Val	Asn	Gln	Thr	Asp		
228					233					238					243		
cgg	gaa	aag	gag	aag	gcc	aaa	gcc	aag	gca	gtg	gcc	ttg	gac	tca	gac	1363	
Arg	Glu	Lys	Glu	Lys	Ala	Lys	Ala	Lys	Ala	Val	Ala	Leu	Asp	Ser	Asp		
244					249					254					259		
aac	atc	tcc	ttg	aag	agt	att	ggc	tcc	cca	gaa	agt	act	ccc	aag	aac	1411	
Asn	Ile	Ser	Leu	Lys	Ser	Ile	Gly	Ser	Pro	Glu	Ser	Thr	Pro	Lys	Asn		
260					265					270					275		
caa	gca	agc	cac	ccc	aca	gcc	acc	aag	ctg	gca	gag	ctg	cca	cca	acc	1459	
Gln	Ala	Ser	His	Pro	Thr	Ala	Thr	Lys	Leu	Ala	Glu	Leu	Pro	Pro	Thr		
276					281					286					291		
cct	ctc	agg	gcc	aca	gcg	aag	agc	ttt	gtc	aaa	cca	ccc	tca	cta	gcc	1507	
Pro	Leu	Arg	Ala	Thr	Ala	Lys	Ser	Phe	Val	Lys	Pro	Pro	Ser	Leu	Ala		
292					297					302					307		
aat	ctt	gac	aag	gtc	aac	tcc	aac	agt	ctg	gat	cta	cca	tca	tcc	agt	1555	
Asn	Leu	Asp	Lys	Val	Asn	Ser	Asn	Ser	Leu	Asp	Leu	Pro	Ser	Ser	Ser		
308					313					318					323		
gat	acc	acc	cat	gct	tca	aag	gtc	cca	gat	ctg	cat	gct	aca	agc	tca	1603	
Asp	Thr	Thr	His	Ala	Ser	Lys	Val	Pro	Asp	Leu	His	Ala	Thr	Ser	Ser		
324					329					334					339		
gca	tct	ggg	ggc	cct	ctc	cct	tcc	tgc	ttc	acc	ccc	agt	ccg	gca	ccc	1651	
Ala	Ser	Gly	Gly	Pro	Leu	Pro	Ser	Cys	Phe	Thr	Pro	Ser	Pro	Ala	Pro		
340					345					350					355		
atc	ctc	aat	att	aac	tca	gcc	agc	ttc	tcc	cag	ggc	ctg	gag	cta	atg	1699	
Ile	Leu	Asn	Ile	Asn	Ser	Ala	Ser	Phe	Ser	Gln	Gly	Leu	Glu	Leu	Met		
356					361					366					371		
agt	ggt	ttc	agt	gtg	cca	aaa	gag	acc	cgc	atg	tac	ccc	aaa	ctc	tca	1747	
Ser	Gly	Phe	Ser	Val	Pro	Lys	Glu	Thr	Arg	Met	Tyr	Pro	Lys	Leu	Ser		

372	377	382	387	
ggc ctg cac agg agc atg gag tcc ctc cag atg cca atg agc ctc ccc				1795
Gly Leu His Arg Ser Met Glu Ser Leu Gln Met Pro Met Ser Leu Pro				
388	393	398	403	
agt gcc ttc ccc agc agt act ccc gtc ccc acc cca cct gct ccc cct				1843
Ser Ala Phe Pro Ser Ser Thr Pro Val Pro Thr Pro Pro Ala Pro Pro				
404	409	414	419	
gct gct ccc aca gaa gaa gag acg gaa gag ctg act tgg agt gga agc				1891
Ala Ala Pro Thr Glu Glu Glu Thr Glu Glu Leu Thr Trp Ser Gly Ser				
420	425	430	435	
ccc aga gct ggg caa ctg gac agt aat cag cgg gat cgg aac act ctt				1939
Pro Arg Ala Gly Gln Leu Asp Ser Asn Gln Arg Asp Arg Asn Thr Leu				
436	441	446	451	
ccc aag aaa ggg ctc agg tac cag ctt cag tcc cag gag gag acc aag				1987
Pro Lys Lys Gly Leu Arg Tyr Gln Leu Gln Ser Gln Glu Glu Thr Lys				
452	457	462	467	
gag agg cga cat tcc cat acc att ggt ggg ctg cct gaa tcc gat gac				2035
Glu Arg Arg His Ser His Thr Ile Gly Gly Leu Pro Glu Ser Asp Asp				
468	473	478	483	
cag tca gag ctg cct tct ccc cct gca ctt ccc atg tct ctg agt gca				2083
Gln Ser Glu Leu Pro Ser Pro Pro Ala Leu Pro Met Ser Leu Ser Ala				
484	489	494	499	
aag ggc caa ctt acc aac ata gtt cac ggc tca gtg ctg tcc ctg gcc				2131
Lys Gly Gln Leu Thr Asn Ile Val His Gly Ser Val Leu Ser Leu Ala				
500	505	510	515	
tcc agt gcc tcc tcc acc tac tcc tca caa atc cgg aag ctt cgt agg				2179
Ser Ser Ala Ser Ser Thr Tyr Ser Ser Gln Ile Arg Lys Leu Arg Arg				
516	521	526	531	
gaa ctg gaa tca tcc cag gaa aaa gtg gcc acc ttg acg tct cag ctt				2227
Glu Leu Glu Ser Ser Gln Glu Lys Val Ala Thr Leu Thr Ser Gln Leu				
532	537	542	547	
tct gcc aat gct aat ctg gtg gct gct ttt gag cag agc ctg gtg aat				2275
Ser Ala Asn Ala Asn Leu Val Ala Ala Phe Glu Gln Ser Leu Val Asn				
548	553	558	563	
atg aca tcc cgc ctg cga cac ctg gca gag acg gcc gag gag aag gac				2323
Met Thr Ser Arg Leu Arg His Leu Ala Glu Thr Ala Glu Glu Lys Asp				
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act gag ctg ctg gat ttg cga gaa acc ata gac ttt ctg aag aaa aag				2371
Thr Glu Leu Leu Asp Leu Arg Glu Thr Ile Asp Phe Leu Lys Lys Lys				
580	585	590	595	
aac tct gag gcc cag gca gtc att cag gga gcc ctt aat gcc tca gaa				2419
Asn Ser Glu Ala Gln Ala Val Ile Gln Gly Ala Leu Asn Ala Ser Glu				
596	601	606	611	



ggagaaagcc cctaaaaaac tggagtacga cagtggtagc ctgaag	atg gaa cct	595
	Met Glu Pro	
	1	
ggg act tct aag tgg cgg agg gag cgg cct gag agc tgt gat gat tca		643
Gly Thr Ser Lys Trp Arg Arg Glu Arg Pro Glu Ser Cys Asp Asp Ser		
4 9 14 19		
tcc aag ggt gga gaa ctg aaa aag ccc atc agc ctg ggc cac cct ggt		691
Ser Lys Gly Gly Glu Leu Lys Lys Pro Ile Ser Leu Gly His Pro Gly		
20 25 30 35		
tcc ctg aag aag ggc aag acc cca cct gtg gct gta act tcc ccc atc		739
Ser Leu Lys Lys Gly Lys Thr Pro Pro Val Ala Val Thr Ser Pro Ile		
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Thr His Thr Ala Gln Ser Ala Leu Lys Val Ala Gly Lys Pro Glu Gly		
52 57 62 67		
aaa gct aca gac aag ggt aag ctt gca gtg aag aat act ggg ctc caa		835
Lys Ala Thr Asp Lys Gly Lys Leu Ala Val Lys Asn Thr Gly Leu Gln		
68 73 78 83		
cgc tcc tcc tct gat gct ggt cgg gac cgc ctg agt gat gct aag aag		883
Arg Ser Ser Ser Asp Ala Gly Arg Asp Arg Leu Ser Asp Ala Lys Lys		
84 89 94 99		
ccc ccc tcg ggc att gct cgc ccc tcc act tcg gga tcc ttt ggc tac		931
Pro Pro Ser Gly Ile Ala Arg Pro Ser Thr Ser Gly Ser Phe Gly Tyr		
100 105 110 115		
aag aag cct cct cct gcc aca ggc aca gcc act gtc atg caa act ggt		979
Lys Lys Pro Pro Pro Ala Thr Gly Thr Ala Thr Val Met Gln Thr Gly		
116 121 126 131		
ggt tca gcc act ctc agc aag atc cag aag tcc tca ggc atc cct gtc		1027
Gly Ser Ala Thr Leu Ser Lys Ile Gln Lys Ser Ser Gly Ile Pro Val		
132 137 142 147		
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Lys Pro Val Asn Gly Arg Lys Thr Ser Leu Asp Val Ser Asn Ser Ala		
148 153 158 163		
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Glu Pro Gly Phe Leu Ala Pro Gly Ala Arg Ser Asn Ile Gln Tyr Arg		
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Ser Leu Pro Arg Pro Ala Lys Ser Ser Ser Met Ser Val Thr Gly Gly		
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Arg Gly Gly Pro Arg Pro Val Ser Ser Ser Ile Asp Pro Ser Leu Leu		
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Ser Thr Lys Gln Gly Gly Leu Thr Pro Ser Arg Leu Lys Glu Pro Thr	
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Lys Val Ala Ser Gly Arg Thr Thr Pro Ala Pro Val Asn Gln Thr Asp	
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Arg Glu Lys Glu Lys Ala Lys Ala Lys Ala Val Ala Leu Asp Ser Asp	
244 249 254 259	
aac atc tcc ttg aag agt att ggc tcc cca gaa agt act ccc aag aac	1411
Asn Ile Ser Leu Lys Ser Ile Gly Ser Pro Glu Ser Thr Pro Lys Asn	
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Gln Ala Ser His Pro Thr Ala Thr Lys Leu Ala Glu Leu Pro Pro Thr	
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Pro Leu Arg Ala Thr Ala Lys Ser Phe Val Lys Pro Pro Ser Leu Ala	
292 297 302 307	
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Asn Leu Asp Lys Val Asn Ser Asn Ser Leu Asp Leu Pro Ser Ser Ser	
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Asp Thr Thr His Ala Ser Lys Val Pro Asp Leu His Ala Thr Ser Ser	
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Ala Ser Gly Gly Pro Leu Pro Ser Cys Phe Thr Pro Ser Pro Ala Pro	
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Ile Leu Asn Ile Asn Ser Ala Ser Phe Ser Gln Gly Leu Glu Leu Met	
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Ser Gly Phe Ser Val Pro Lys Glu Thr Arg Met Tyr Pro Lys Leu Ser	
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Gly Leu His Arg Ser Met Glu Ser Leu Gln Met Pro Met Ser Leu Pro	
388 393 398 403	
agt gcc ttc ccc agc agt act ccc gtc ccc acc cca cct gct ccc cct	1843
Ser Ala Phe Pro Ser Ser Thr Pro Val Pro Thr Pro Pro Ala Pro Pro	
404 409 414 419	
gct gct ccc aca gaa gaa gag acg gaa gag ctg act tgg agt gga agc	1891
Ala Ala Pro Thr Glu Glu Glu Thr Glu Glu Leu Thr Trp Ser Gly Ser	
420 425 430 435	
ccc aga gct ggg caa ctg gac agt aat cag cgg gat cgg aac act ctt	1939
Pro Arg Ala Gly Gln Leu Asp Ser Asn Gln Arg Asp Arg Asn Thr Leu	

436	441	446	451	
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Pro Lys Lys Gly Leu Arg Tyr Gln Leu Gln Ser Gln Glu Glu Thr Lys				
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Glu Arg Arg His Ser His Thr Ile Gly Gly Leu Pro Glu Ser Asp Asp				
468	473	478	483	
cag tca gag ctg cct tct ccc cct gca ctt ccc atg tct ctg agt gca				2083
Gln Ser Glu Leu Pro Ser Pro Pro Ala Leu Pro Met Ser Leu Ser Ala				
484	489	494	499	
aag ggc caa ctt acc aac ata gtg agt ccc act gcg gcc acc acg cca				2131
Lys Gly Gln Leu Thr Asn Ile Val Ser Pro Thr Ala Ala Thr Thr Pro				
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aga atc acc cgc tcc aac agc atc ccc acc cac gag gcg gcc ttc gag				2179
Arg Ile Thr Arg Ser Asn Ser Ile Pro Thr His Glu Ala Ala Phe Glu				
516	521	526	531	
ctg tac agc ggc tcc caa atg ggg agc acc ctg tcc ctg gcc gag aga				2227
Leu Tyr Ser Gly Ser Gln Met Gly Ser Thr Leu Ser Leu Ala Glu Arg				
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Pro Lys Gly Met Ile Arg Ser Gly Ser Phe Arg Asp Pro Thr Asp Asp				
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gtt cac ggc tca gtg ctg tcc ctg gcc tcc agt gcc tcc tcc acc tac				2323
Val His Gly Ser Val Leu Ser Leu Ala Ser Ser Ala Ser Ser Thr Tyr				
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Ser Ser Ala Glu Glu Arg Met Gln Ser Glu Gln Ile Arg Lys Leu Arg				
580	585	590	595	
agg gaa ctg gaa tca tcc cag gaa aaa gtg gcc acc ttg acg tct cag				2419
Arg Glu Leu Glu Ser Ser Gln Glu Lys Val Ala Thr Leu Thr Ser Gln				
596	601	606	611	
ctt tct gcc aat gct aat ctg gtg gct gct ttt gag cag agc ctg gtg				2467
Leu Ser Ala Asn Ala Asn Leu Val Ala Ala Phe Glu Gln Ser Leu Val				
612	617	622	627	
aat atg aca tcc cgc ctg cga cac ctg gca gag acg gcc gag gag aag				2515
Asn Met Thr Ser Arg Leu Arg His Leu Ala Glu Thr Ala Glu Glu Lys				
628	633	638	643	
gac act gag ctg ctg gat ttg cga gaa acc ata gac ttt ctg aag aaa				2563
Asp Thr Glu Leu Leu Asp Leu Arg Glu Thr Ile Asp Phe Leu Lys Lys				
644	649	654	659	
aag aac tct gag gcc cag gca gtc att cag gga gcc ctt aat gcc tca				2611
Lys Asn Ser Glu Ala Gln Ala Val Ile Gln Gly Ala Leu Asn Ala Ser				
660	665	670	675	

gaa acc aca ccc aaa ggt agg aca tcc agc cac aga ttg aga ggg aac 2659  
 Glu Thr Thr Pro Lys Gly Arg Thr Ser Ser His Arg Leu Arg Gly Asn  
 676 681 686 691  
 agg gag cag gaa agt aag agt att aca gat ttt tat ctg ggc cca tag 2707  
 Arg Glu Gln Glu Ser Lys Ser Ile Thr Asp Phe Tyr Leu Gly Pro \*  
 692 697 702 707  
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 acgcgtccgc ggacgcgtgg gccgcctga agaagctggt ggggtcggac caggccccgg 180  
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 Met Asn Gln Ala Leu Gln  
 1  
 agg cgc ttc gcc aag ggg gtg cag tac aac atg aag ata gtg atc cgg 281  
 Arg Arg Phe Ala Lys Gly Val Gln Tyr Asn Met Lys Ile Val Ile Arg  
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 Gly Asp Arg Asn Thr Gly Lys Thr Ala Leu Trp His Arg Leu Gln Gly

23	28	33	38	
cgg ccg ttc gtg gag gag tac atc ccc aca cag gag atc cag gtc acc				377
Arg Pro Phe Val Glu Glu Tyr Ile Pro Thr Gln Glu Ile Gln Val Thr				
39	44	49	54	
agc atc cac tgg agc tac aag acc acg gat gac atc gtg aag gtt gaa				425
Ser Ile His Trp Ser Tyr Lys Thr Thr Asp Asp Ile Val Lys Val Glu				
55	60	65	70	
gtc tgg gat gta gta gac aaa gga aaa tgc aaa aag cga ggc gac ggc				473
Val Trp Asp Val Val Asp Lys Gly Lys Cys Lys Lys Arg Gly Asp Gly				
71	76	81	86	
tta aag atg gag aac gac ccc cag gag gcg gag tct gaa atg gcc ctg				521
Leu Lys Met Glu Asn Asp Pro Gln Glu Ala Glu Ser Glu Met Ala Leu				
87	92	97	102	
gat gct gag ttc ctg gac gtg tac aag aac tgc aac ggg gtg gtc atg				569
Asp Ala Glu Phe Leu Asp Val Tyr Lys Asn Cys Asn Gly Val Val Met				
103	108	113	118	
atg ttc gac att acc aag cag tgg acc ttc aat tac att ctc cgg gag				617
Met Phe Asp Ile Thr Lys Gln Trp Thr Phe Asn Tyr Ile Leu Arg Glu				
119	124	129	134	
ctt cca aaa gtg ccc acc cac gtg cca gtg tgc gtg ctg ggg aac tac				665
Leu Pro Lys Val Pro Thr His Val Pro Val Cys Val Leu Gly Asn Tyr				
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cgg gac atg ggc gag cac cga gtc atc ctg ccg gac gac gtg cgt gac				713
Arg Asp Met Gly Glu His Arg Val Ile Leu Pro Asp Asp Val Arg Asp				
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ttc atc gac aac ctg gac aga cct cca ggt tcc tcc tac ttc cgc tat				761
Phe Ile Asp Asn Leu Asp Arg Pro Pro Gly Ser Ser Tyr Phe Arg Tyr				
167	172	177	182	
gct gag tct tcc atg aag aac agc ttc ggc cta aag tac ctt cat aag				809
Ala Glu Ser Ser Met Lys Asn Ser Phe Gly Leu Lys Tyr Leu His Lys				
183	188	193	198	
ttc ttc aat atc cca ttt ttg cag ctt cag agg gag acg ctg ttg cgg				857
Phe Phe Asn Ile Pro Phe Leu Gln Leu Gln Arg Glu Thr Leu Leu Arg				
199	204	209	214	
cag ctg gag acg aac cag ctg gac atg gac gcc acg ctg gag gag ctg				905
Gln Leu Glu Thr Asn Gln Leu Asp Met Asp Ala Thr Leu Glu Glu Leu				
215	220	225	230	
tcg gtg cag cag gag agg gag gac cag aac tac ggc atc ttc ctg gag				953
Ser Val Gln Gln Glu Arg Glu Asp Gln Asn Tyr Gly Ile Phe Leu Glu				
231	236	241	246	
atg atg gag gct cgc agc cgt ggc cat gcg tcc cca ctg gcg gcc aac				1001
Met Met Glu Ala Arg Ser Arg Gly His Ala Ser Pro Leu Ala Ala Asn				
247	252	257	262	

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Gly Gln Ser Pro Ser Pro Gly Ser Gln Ser Pro Val Val Pro Ala Gly	
263 268 273 278	
gct gtg tcc acg ggg agc tcc agc ccc ggc aca ccc cag ccc gcc cca	1097
Ala Val Ser Thr Gly Ser Ser Ser Pro Gly Thr Pro Gln Pro Ala Pro	
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Gln Leu Pro Leu Asn Ala Ala Pro Pro Ser Ser Val Pro Pro Val Pro	
295 300 305 310	
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Pro Ser Glu Ala Leu Pro Pro Ala Cys Pro Ser Ala Pro Ala Pro	
311 316 321 326	
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Arg Arg Ser Ile Ile Ser Arg Leu Phe Gly Thr Ser Pro Ala Thr Glu	
327 332 337 342	
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Ala Ala Pro Pro Pro Pro Glu Pro Val Pro Ala Ala Gln Gly Pro Ala	
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Thr Val Gln Ser Val Glu Asp Phe Val Pro Asp Asp Arg Leu Asp Arg	
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Ser Phe Leu Glu Asp Thr Thr Pro Ala Arg Asp Glu Lys Lys Val Gly	
375 380 385 390	
gcc aag gct gcc cag cag gac agc gac agt gat ggg gag gcc ctg ggc	1433
Ala Lys Ala Ala Gln Gln Asp Ser Asp Ser Asp Gly Glu Ala Leu Gly	
391 396 401 406	
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Gly Asn Pro Met Val Ala Gly Phe Gln Asp Asp Val Asp Leu Glu Asp	
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Gln Pro Arg Gly Ser Pro Pro Leu Pro Ala Gly Pro Val Pro Ser Gln	
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Asp Ile Thr Leu Ser Ser Glu Glu Glu Ala Glu Val Ala Ala Pro Thr	
439 444 449 454	
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Lys Gly Pro Ala Pro Ala Pro Gln Gln Cys Ser Glu Pro Glu Thr Lys	
455 460 465 470	
tgg tcc tcc ata cca gct tcg aag cca ccg agg ggg aca gct ccc acg	1673
Trp Ser Ser Ile Pro Ala Ser Lys Pro Arg Arg Gly Thr Ala Pro Thr	
471 476 481 486	

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Arg Thr Ala Ala Pro Pro Trp Pro Gly Gly Val Ser Val Arg Thr Gly	
487 492 497 502	
ccg gag aag cgc agc agc acc agg ccc cct gct gag atg gag ccg ggg	1769
Pro Glu Lys Arg Ser Ser Thr Arg Pro Pro Ala Glu Met Glu Pro Gly	
503 508 513 518	
aag ggt gag cag gcc tcc tcg tcg gag agt gac ccc gag gga ccc att	1817
Lys Gly Glu Gln Ala Ser Ser Ser Glu Ser Asp Pro Glu Gly Pro Ile	
519 524 529 534	
gct gca caa atg ctg tcc ttc gtc atg gat gac ccc gag ttt gag agc	1865
Ala Ala Gln Met Leu Ser Phe Val Met Asp Asp Pro Asp Phe Glu Ser	
535 540 545 550	
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Glu Gly Ser Asp Thr Gln Arg Arg Ala Asp Asp Phe Pro Val Arg Asp	
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Asp Pro Ser Asp Val Thr Asp Glu Asp Glu Gly Pro Ala Glu Pro Pro	
567 572 577 582	
cca ccc ccc aag ctc cct ctc ccc gcc ttc aga ctg aag aat gac tcg	2009
Pro Pro Pro Lys Leu Pro Leu Pro Ala Phe Arg Leu Lys Asn Asp Ser	
583 588 593 598	
gac ctc ttc ggg ctg ggg ctg gag gag gcc gga ccc aag gag agc agt	2057
Asp Leu Phe Gly Leu Gly Leu Glu Glu Ala Gly Pro Lys Glu Ser Ser	
599 604 609 614	
gag gaa ggt aag gag ggc aaa acc ccc tct aag gag aag aag aaa aaa	2105
Glu Glu Gly Lys Glu Gly Lys Thr Pro Ser Lys Glu Lys Lys Lys Lys	
615 620 625 630	
aaa aaa aaa ggg cgg ccg ctc tag agtatccctc gaggggcccc agcttacgcg	2159
Lys Lys Lys Gly Arg Pro Leu *	
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ttttccaaga gcagcagaaa atg aat aaa tcc ctg ggg cca gtg tca ttc 170  
Met Asn Lys Ser Leu Gly Pro Val Ser Phe  
1 5

aag gac gtg gct gtg gac ttc acc cag gag gaa tgg cag cag ctg gat 218  
Lys Asp Val Ala Val Asp Phe Thr Gln Glu Glu Trp Gln Gln Leu Asp  
11 16 21 26

cct gag cag aag ata act tac agg gat gtg atg ctg gag aac tac agc 266  
Pro Glu Gln Lys Ile Thr Tyr Arg Asp Val Met Leu Glu Asn Tyr Ser  
27 32 37 42

aat cta gtt tct gtg ggg tat cac att atc aaa ccg gat gtt atc agc 314  
Asn Leu Val Ser Val Gly Tyr His Ile Ile Lys Pro Asp Val Ile Ser  
43 48 53 58

aag ttg gag caa gga gaa gag cca tgg ata gta gaa gga gaa ttc cta 362  
Lys Leu Glu Gln Gly Glu Glu Pro Trp Ile Val Glu Gly Glu Phe Leu  
59 64 69 74

ctt cag agc tat cca gat gaa gtc tgg caa act gat gac cta ata gag 410  
Leu Gln Ser Tyr Pro Asp Glu Val Trp Gln Thr Asp Asp Leu Ile Glu  
75 80 85 90

aga atc cag gaa gag gaa aat aaa cct tca agg caa act gtg ttc att 458  
Arg Ile Gln Glu Glu Glu Asn Lys Pro Ser Arg Gln Thr Val Phe Ile  
91 96 101 106

gag acc ctg att gaa gag aga ggt aat gtt cct ggt aaa act ttt gat 506  
Glu Thr Leu Ile Glu Glu Arg Gly Asn Val Pro Gly Lys Thr Phe Asp  
107 112 117 122

gta gaa acg aac cct gtt cct tca aga aaa ata gcc tat aaa aat agc 554  
Val Glu Thr Asn Pro Val Pro Ser Arg Lys Ile Ala Tyr Lys Asn Ser  
123 128 133 138

ctc tgt gac tca tgt gaa aag tgt tta acg tct gtt tca gaa tat att 602  
Leu Cys Asp Ser Cys Glu Lys Cys Leu Thr Ser Val Ser Glu Tyr Ile  
139 144 149 154

agt agt gat gga agc tat gca aga atg aaa gct gat gaa tgt agt gga 650  
Ser Ser Asp Gly Ser Tyr Ala Arg Met Lys Ala Asp Glu Cys Ser Gly  
155 160 165 170

tgt ggg aaa tca ctc ctc cat att aag ctt gag aaa act cat cca gga 698  
Cys Gly Lys Ser Leu Leu His Ile Lys Leu Glu Lys Thr His Pro Gly  
171 176 181 186

gat caa gct tat gaa ttt aat caa aat ggg gaa cct tat act cta aat 746  
Asp Gln Ala Tyr Glu Phe Asn Gln Asn Gly Glu Pro Tyr Thr Leu Asn  
187 192 197 202

gaa gaa agt ctt tat cag aaa att cgt att ttg gag aaa cct ttt gaa 794

Glu Glu Ser Leu Tyr Gln Lys Ile Arg Ile Leu Glu Lys Pro Phe Glu	
203 208 213 218	
tat att gaa tgc cag aaa gcc ttc caa aag gac act gtt ttt gtt aat	842
Tyr Ile Glu Cys Gln Lys Ala Phe Gln Lys Asp Thr Val Phe Val Asn	
219 224 229 234	
cac atg gaa gaa aag ccc tat aag tgg aat gga tct gaa ata gcc ttt	890
His Met Glu Glu Lys Pro Tyr Lys Trp Asn Gly Ser Glu Ile Ala Phe	
235 240 245 250	
ctc cag atg tgc gac ctc act gta cat cag aca tct cat atg gaa atg	938
Leu Gln Met Ser Asp Leu Thr Val His Gln Thr Ser His Met Glu Met	
251 256 261 266	
aag ccc tat gaa tgc agt gaa tgt ggg aaa tcc ttc tgt aaa aag tca	986
Lys Pro Tyr Glu Cys Ser Glu Cys Gly Lys Ser Phe Cys Lys Lys Ser	
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Lys Phe Ile Ile His Gln Arg Thr His Thr Gly Glu Lys Pro Tyr Glu	
283 288 293 298	
tgt aat cag tgt ggg aaa tcc ttc tgc cag aag gga acc ctt act gtg	1082
Cys Asn Gln Cys Gly Lys Ser Phe Cys Gln Lys Gly Thr Leu Thr Val	
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cat cag aga aca cac aca ggg gag aag ccc tat gaa tgt aat gaa tgt	1130
His Gln Arg Thr His Thr Gly Glu Lys Pro Tyr Glu Cys Asn Glu Cys	
315 320 325 330	
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Gly Lys Asn Phe Tyr Gln Lys Leu His Leu Ile Gln His Gln Arg Thr	
331 336 341 346	
cac tca gga gag aag ccc tat gaa tgt agt tat tgt gga aaa tcc ttt	1226
His Ser Gly Glu Lys Pro Tyr Glu Cys Ser Tyr Cys Gly Lys Ser Phe	
347 352 357 362	
tgc cag aag aca cac ctc aca caa cat cag aga aca cat tca gga gag	1274
Cys Gln Lys Thr His Leu Thr Gln His Gln Arg Thr His Ser Gly Glu	
363 368 373 378	
aga cct tat gtt tgt cat gac tgt ggg aaa acc ttc tgc cag aag tca	1322
Arg Pro Tyr Val Cys His Asp Cys Gly Lys Thr Phe Ser Gln Lys Ser	
379 384 389 394	
gca ctt aat gac cat cag aaa att cac aca ggt gtg aaa ctc tac aag	1370
Ala Leu Asn Asp His Gln Lys Ile His Thr Gly Val Lys Leu Tyr Lys	
395 400 405 410	
tgt agt gaa tgt ggg aaa tgc ttc tgc cgc aag tct act ctc acg acc	1418
Cys Ser Glu Cys Gly Lys Cys Phe Cys Arg Lys Ser Thr Leu Thr Thr	
411 416 421 426	
cac ctg agg acc cac aca gga gag aaa ccg tat gaa tgt aat gag tgt	1466
His Leu Arg Thr His Thr Gly Glu Lys Pro Tyr Glu Cys Asn Glu Cys	



427	432	437	442	
gga aaa gcc ttc tct cgg atg tca tac ctc act gta cat tat aga act				1514
Gly Lys Ala Phe Ser Arg Met Ser Tyr Leu Thr Val His Tyr Arg Thr				
443	448	453	458	
cat tca gga gag aaa ccc tat gag tgt act gaa tgt gga aaa aaa ttc				1562
His Ser Gly Glu Lys Pro Tyr Glu Cys Thr Glu Cys Gly Lys Lys Phe				
459	464	469	474	
tac cac aaa tca gca ttc aac agc cat cag aga att cat agg aga ggc				1610
Tyr His Lys Ser Ala Phe Asn Ser His Gln Arg Ile His Arg Arg Gly				
475	480	485	490	
aat atg aat gta ata gat gtg gga agg ctt ctc tga agtc agacctcatt				1660
Asn Met Asn Val Ile Asp Val Gly Arg Leu Leu *				
491	496	501		
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cgtcgggtcg tcgacgctgg gctttcgggt cccgcgccca gag atg ggc tcc aag	175
	Met Gly Ser Lys
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gca aag aag cgc gtg ctg ctg ccc acc cgc cca gcg ccc ccc acg' gtg	223
Ala Lys Lys Arg Val Leu Leu Pro Thr Arg Pro Ala Pro Pro Thr Val	
5 10 15 20	

gag cag atc ctg gag gat gtg cgg ggt gcg ccg gca gag gat cca gtg	271
Glu Gln Ile Leu Glu Asp Val Arg Gly Ala Pro Ala Glu Asp Pro Val	
21 26 31 36	
ttc acc atc ctg gcc ccg gaa gac ccc cca gtt ccc ttc agg atg atg	319
Phe Thr Ile Leu Ala Pro Glu Asp Pro Pro Val Pro Phe Arg Met Met	
37 42 47 52	
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Glu Asp Ala Glu Ala Pro Gly Glu Gln Leu Tyr Gln Gln Ser Arg Ala	
53 58 63 68	
tac gtg gct gcc aac cag cgg ctg cag cag gcg ggc aac gtg ctg agg	415
Tyr Val Ala Ala Asn Gln Arg Leu Gln Gln Ala Gly Asn Val Leu Arg	
69 74 79 84	
cag agg tgt gag ctc ctg cag cga gcc ggc gag gac ctg gag cgg gag	463
Gln Arg Cys Glu Leu Leu Gln Arg Ala Gly Glu Asp Leu Glu Arg Glu	
85 90 95 100	
gtg gcc cag atg aag cag gca gca tta ccg gca gcc gag gct gcc tcc	511
Val Ala Gln Met Lys Gln Ala Ala Leu Pro Ala Ala Glu Ala Ala Ser	
101 106 111 116	
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Ser Gly *	
117	
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atgccgagtt ggtgggaccc acccagctgg ctccgtcctg cgtgacctga gggccccact	747
ggggttcttg aagaggatag ggacattatt gctgtactgt gattctgtcg tcagctcaca	807
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agg gac ccc gct cag ggc tat gtg acc ttt gag gat gtg gct gtc tac      221
Arg Asp Pro Ala Gln Gly Tyr Val Thr Phe Glu Asp Val Ala Val Tyr
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ttc tcc cag gag gaa tgg aga ttg ctt gat gac gct cag agg ctc ctc      269
Phe Ser Gln Glu Glu Trp Arg Leu Leu Asp Asp Ala Gln Arg Leu Leu
  23              28              33              38

tac cgc aat gtg atg ctg gag aac ttt aca ctt ctg gcc tct ctg gga      317
Tyr Arg Asn Val Met Leu Glu Asn Phe Thr Leu Leu Ala Ser Leu Gly
  39              44              49              54

ctt gcg tct tcc aag acc cat gaa ata acc cag ctg gag tca tgg gag      365
Leu Ala Ser Ser Lys Thr His Glu Ile Thr Gln Leu Glu Ser Trp Glu
  55              60              65              70

gag ccc ttc atg cct gct tgg gaa gtt gtg act tca gcc ata ccg aga      413
Glu Pro Phe Met Pro Ala Trp Glu Val Val Thr Ser Ala Ile Pro Arg
  71              76              81              86

ggg tgt tgg cat gga gcc gag gct gag gag gct cct gag cag att gct      461
Gly Cys Trp His Gly Ala Glu Ala Glu Glu Ala Pro Glu Gln Ile Ala
  87              92              97              102

tct gta gga ctg ctc agt tca aac att cag caa cac cag aag cag cac      509
Ser Val Gly Leu Leu Ser Ser Asn Ile Gln Gln His Gln Lys Gln His
  103              108              113              118

tgt gga gag aaa ccc tta aaa aga caa cag ggc agg gtc cca gtt ttg      557
Cys Gly Glu Lys Pro Leu Lys Arg Gln Gln Gly Arg Val Pro Val Leu
  119              124              129              134

agg agt tgc aaa gtt cac cta tca gag aag tcc ttg caa agc agg gag      605
Arg Ser Cys Lys Val His Leu Ser Glu Lys Ser Leu Gln Ser Arg Glu
  135              140              145              150

gtt ggg aag gcc ctc ctg atc agc tca ggt gtt ctc aag cac cag gtg      653

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Thr	His	Thr	Gly	Glu	Lys	Ser	His	Arg	Ser	Ser	Lys	Ser	Arg	Glu	Ala	
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Phe	His	Ala	Gly	Lys	Arg	His	Tyr	Lys	Cys	Ser	Glu	Cys	Gly	Lys	Ala	
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Phe	Gly	Gln	Lys	Tyr	Leu	Leu	Val	Gln	His	Gln	Arg	Leu	His	Ala	Gly	
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Lys	Lys	Thr	Tyr	Glu	Cys	Ser	Glu	Cys	Gly	Lys	Leu	Phe	Arg	Asp	Met	
215					220					225					230	
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Ser	Asn	Leu	Phe	Ile	His	Gln	Ile	Val	His	Thr	Gly	Glu	Arg	Pro	Tyr	
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Gly	Cys	Ser	Asn	Cys	Gly	Lys	Ser	Phe	Ser	Arg	Asn	Ala	His	Leu	Ile	
247					252					257					262	
gaa	cac	cag	aga	gtt	cac	act	gga	gaa	aag	cct	ttt	aca	tgc	agt	gaa	989
Glu	His	Gln	Arg	Val	His	Thr	Gly	Glu	Lys	Pro	Phe	Thr	Cys	Ser	Glu	
263					268					273					278	
tgt	gga	aaa	gct	ttc	agg	cat	aat	tcc	aca	ctt	gtt	cag	cat	cac	aaa	1037
Cys	Gly	Lys	Ala	Phe	Arg	His	Asn	Ser	Thr	Leu	Val	Gln	His	His	Lys	
279					284					289					294	
atc	cac	act	gga	gta	agg	cct	tat	gag	tgc	agt	gaa	tgt	gga	aaa	ttg	1085
Ile	His	Thr	Gly	Val	Arg	Pro	Tyr	Glu	Cys	Ser	Glu	Cys	Gly	Lys	Leu	
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Phe	Ser	Phe	Asn	Ser	Ser	Leu	Met	Lys	His	Gln	Arg	Ile	His	Thr	Gly	
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Glu	Arg	Pro	Tyr	Lys	Cys	Ser	Glu	Cys	Gly	Lys	Phe	Tyr	Ser	His	Lys	
327					332					337					342	
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Ser	Asn	Leu	Ile	Lys	His	Trp	Arg	Val	His	Thr	Gly	Glu	Arg	Pro	Tyr	
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aag	tgc	agc	gac	tgt	ggg	aaa	ttt	ttt	acc	caa	tgc	tca	agc	ctc	atg	1277
Lys	Cys	Ser	Asp	Cys	Gly	Lys	Phe	Phe	Thr	Gln	Cys	Ser	Ser	Leu	Met	
359					364					369					374	
caa	cat	caa	aaa	gtt	cac	act	gga	gaa	aag	cct	ttt	aag	tgc	aat	gaa	1325
Gln	His	Gln	Lys	Val	His	Thr	Gly	Glu	Lys	Pro	Phe	Lys	Cys	Asn	Glu	

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Cys Gly Arg Phe Phe	Arg Glu Asn Ser Thr	Leu Val Arg His Gln	Arg	
391	396	401	406	
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Val His Thr Gly Ala	Lys Pro Tyr Glu Cys	Arg Glu Cys Gly Lys	Phe	
407	412	417	422	
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Phe Ser Gln Ser Ser	Thr Leu Met Gln His	Arg Lys Val His Ile	Gly	
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Glu Lys Pro Phe Lys	Cys Asn Glu Cys Gly	Arg Leu Phe Arg Glu	Asn	
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Ser Ser Leu Val Lys	His Gln Arg Val His	Thr Gly Ala Lys Pro	Tyr	
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gag tgc agg gaa tgt	ggg aag ttt ttt cgc	cac aac tcc agt ctt	ttt	1613
Glu Cys Arg Glu Cys	Gly Lys Phe Phe Arg	His Asn Ser Ser Leu	Phe	
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Lys His Arg Arg Ile	His Thr Gly Glu Met	Gln *		
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aacacagagg actcacc      atg gag ttt ggg ctg agc tgg ctt ttc ctt gct      290
                        Met Glu Phe Gly Leu Ser Trp Leu Phe Leu Ala
                        1          5

gct ttt ttt aaa ggt gtt cag tgc gag gtg cag ctg gtg gag tct ggg      338
Ala Phe Phe Lys Gly Val Gln Cys Glu Val Gln Leu Val Glu Ser Gly
12          17          22          27

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Gly Gly Leu Val Lys Ala Gly Gly Ser Leu Arg Leu Ser Cys Ala Ala
28          33          38          43

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Ser Gly Phe Arg Ser Thr Ser Ala Ser Met Ser Trp Val Arg Gln Arg
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Pro Gly Lys Gly Leu Glu Trp Leu Gly His Ile Lys Ser Lys Asp Asp
60          65          70          75

gat ggg acg aca gac tac gct gca ccc gtg aaa ggc aga ttc acc atc      530
Asp Gly Thr Thr Asp Tyr Ala Ala Pro Val Lys Gly Arg Phe Thr Ile
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Ser Arg Asp Asp Ser Glu Asn Thr Gly Arg Arg Gly Arg Glu Phe Gln
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atc tat gaa tcg tag atactgaaaa accccgcaag ttcaattcaa ctgtgcatcg      633
Ile Tyr Glu Ser *
108

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Met Gly Cys Leu Trp Gly Leu Ala Leu Pro  
          1                       5

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11 16 21 26

ccc agc acc cgc aga gca gac act gcg atg aca acg gac gac aca gaa 266  
Pro Ser Thr Arg Arg Ala Asp Thr Ala Met Thr Thr Asp Asp Thr Glu  
27 32 37 42

gtg ccc gct atg act cta gca ccg ggc cac gcc gct ctg gaa act caa 314  
Val Pro Ala Met Thr Leu Ala Pro Gly His Ala Ala Leu Glu Thr Gln  
43 48 53 58

acg ctg agc gct gag acc tct tct agg gcc tca acc cca gcc ggc ccc 362  
Thr Leu Ser Ala Glu Thr Ser Ser Arg Ala Ser Thr Pro Ala Gly Pro  
59 64 69 74

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Ile Pro Glu Ala Glu Thr Arg Gly Ala Lys Arg Ile Ser Pro Ala Arg  
75 80 85 90

gag acc agg agt ttc aca aaa aca tct ccc aac ttc atg gtg ctg atc 458  
Glu Thr Arg Ser Phe Thr Lys Thr Ser Pro Asn Phe Met Val Leu Ile  
91 96 101 106

gcc acc tcc gtg gag aca tca gcc gcc agt ggc agc ccc gag gga gct 506  
Ala Thr Ser Val Glu Thr Ser Ala Ala Ser Gly Ser Pro Glu Gly Ala  
107 112 117 122

gga atg acc aca gtt cag acc atc aca ggc agt gat ccc gag gaa gcc 554  
Gly Met Thr Thr Val Gln Thr Ile Thr Gly Ser Asp Pro Glu Glu Ala  
123 128 133 138

atc ttt gac acc ctt tgc acc gat gac agc tct gaa gag gca aag aca 602  
Ile Phe Asp Thr Leu Cys Thr Asp Asp Ser Ser Glu Glu Ala Lys Thr  
139 144 149 154

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171 176 181 186

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Ile Thr Pro Ser Arg Ala Ser Glu Ser Ser Ala Ser Ser Asp Gly Pro	
187 192 197 202	
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His Pro Val Ile Thr Pro Ser Arg Ala Ser Glu Ser Ser Ala Ser Ser	
203 208 213 218	
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Asp Gly Pro His Pro Val Ile Thr Pro Ser Trp Ser Pro Gly Ser Asp	
219 224 229 234	
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Val Thr Leu Leu Ala Glu Ala Leu Val Thr Val Thr Asn Ile Glu Val	
235 240 245 250	
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Ile Asn Cys Ser Ile Thr Glu Ile Glu Thr Thr Thr Ser Ser Ile Pro	
251 256 261 266	
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Gly Ala Ser Asp Ile Asp Leu Ile Pro Thr Glu Gly Val Lys Ala Ser	
267 272 277 282	
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Ser Thr Ser Asp Pro Pro Ala Leu Pro Asp Ser Thr Glu Ala Lys Pro	
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His Ile Thr Glu Val Thr Ala Ser Ala Glu Thr Leu Ser Thr Ala Gly	
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Thr Asn Ser Ala Thr Glu Arg Glu Val Thr Ala Pro Gly Ala Thr Thr	
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Leu Ser Gly Ala Leu Val Thr Val Ser Arg Asn Pro Leu Glu Glu Thr	
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Ser Ala Leu Ser Val Glu Thr Pro Ser Tyr Val Lys Val Ser Gly Ala	
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Phe Ala Gly Ser Ser Ala Ser Ser Tyr Ser Pro Ser Glu Ala Ala Leu	
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Gly Pro Phe Pro Thr Ser Arg Asp Pro Leu Leu Ser Val Pro Pro Thr	
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Ala Arg Thr Arg Pro Thr Thr Asp Val Ser Ala Gly Glu Asn Gly Gly	
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Phe Leu Leu Leu Arg Leu Ser Val Ala Ser Pro Glu Asp Leu Thr Asp	
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Pro Arg Val Ala Glu Arg Leu Met Gln Gln His Arg Glu Leu His	
507 512 517 522	
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Ala His Ala Pro His Phe Gln Val Ser Leu Leu Arg Val Arg Arg Gly	
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539	
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Ala Thr Glu Leu Ala Gln Ala His Ile Cys Gln Ala Ser Glu Asn Asp
    17        22        27        32

ctc tac ctg gag cgc ctg ctg ctg tgt gtg cag gct ctg gtg tct gtg      862
Leu Tyr Leu Glu Arg Leu Leu Leu Cys Val Gln Ala Leu Val Ser Val
    33        38        43        48

tgt cat gag gac tgt ggc gtg gcc agc ctg cag ctc ttg gac gtg ctg      910
Cys His Glu Asp Cys Gly Val Ala Ser Leu Gln Leu Leu Asp Val Leu
    49        54        59        64

ctg aca ata gtg gcc ctc gca ggt gct acc ggc ctg agg gac aag gca      958
Leu Thr Ile Val Ala Leu Ala Gly Ala Thr Gly Leu Arg Asp Lys Ala
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cag gag acg atg gac tca ctg gcc atg gtg gag ggt gtc agc agc tgc      1006
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    81        86        91        96

cag gac ctc tac cgc aag cac att ggt ccc ctc ctg gag cgg gtg acc      1054
Gln Asp Leu Tyr Arg Lys His Ile Gly Pro Leu Leu Glu Arg Val Thr
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Ala Ser His Leu Asp Trp Thr Ala His Ser Pro Glu Leu Leu Gln Phe
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Thr Val Thr Lys Asp Ile Leu Ala Pro Asn Leu Gln Trp His Ala Gly	
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Met Thr Arg Leu Ile Ser Cys Arg Ile Ile Asn Thr Phe Leu Lys Thr	
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Lys Ser Tyr Tyr Gln Ser Ser Val Gln Tyr Leu Tyr Arg Glu Leu Leu	
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Val His Leu Asp Asp Pro Glu Arg Ala Ile Gln Asp Ala Ile Leu Glu	
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Thr	Glu	Ala	Val	Ile	His	Lys	His	Arg	Ser	Ala	Thr	Tyr	Cys	Glu	Gln	
369					374					379					384	
ctc	ctg	cag	cat	gtg	cag	gcc	gtg	cca	gcc	aca	cag	tga	ccacgctgg			1919
Leu	Leu	Gln	His	Val	Gln	Ala	Val	Pro	Ala	Thr	Gln	*				
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	Met Pro Phe Gly Cys Val Thr Leu Gly	
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Leu Gly Gln Val Ile Lys Thr Glu Glu Phe Cys Glu Ile Phe Arg Ala		
26 31 36 41		
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Lys Asp Lys Thr Thr Gly Lys Leu His Thr Cys Lys Lys Phe Gln Lys		
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Arg Asp Gly Arg Lys Val Arg Lys Ala Ala Lys Asn Glu Ile Gly Ile		
58 63 68 73		
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Glu Val Phe Asp Trp Ile Leu Asp Gln Gly Tyr Tyr Ser Glu Arg Asp		
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Thr Ser Asn Val Val Arg Gln Val Leu Glu Ala Val Ala Tyr Leu His		
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138 143 148 153		
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Tyr Asn Arg Leu Lys Asn Ser Lys Ile Val Ile Ser Asp Phe His Leu		
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Ala Lys Leu Glu Asn Gly Leu Ile Lys Glu Pro Cys Gly Thr Pro Glu		
170 175 180 185		
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Tyr Leu Ala Pro Glu Val Val Gly Arg Gln Arg Tyr Gly Arg Pro Val		
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Asp Cys Trp Ala Ile Gly Val Ile Met Tyr Ile Leu Leu Ser Gly Asn		
202 207 212 217		

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Pro Pro Phe Tyr Glu Glu Val Glu Glu Asp Asp Tyr Glu Asn His Asp	
218 223 228 233	
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Lys Asn Leu Phe Arg Lys Ile Leu Ala Gly Asp Tyr Glu Phe Asp Ser	
234 239 244 249	
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Pro Tyr Trp Asp Asp Ile Ser Gln Ala Ala Lys Asp Leu Val Thr Arg	
250 255 260 265	
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266 271 276 281	
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Asp Gly Val Cys Ala Gln Ile Glu Lys Asn Phe Ala Arg Ala Lys Trp	
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Lys Lys Ala Val Arg Val Thr Thr Leu Met Lys Arg Leu Arg Ala Pro	
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Glu Gln Ser Ser Thr Ala Ala Ala Gln Ser Ala Ser Ala Thr Asp Thr	
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Ala Thr Pro Gly Ala Ala Asp Arg Ser Ala Thr Pro Ala Thr Asp Gly	
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Ser Ala Thr Pro Ala Thr Asp Gly Ser Val Thr Pro Ala Thr Asp Gly	
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Ser Ile Thr Pro Ala Thr Asp Gly Ser Val Thr Pro Ala Thr Asp Arg	
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Ser Ala Thr Pro Ser Thr Asp Gly Ile Ala Thr Pro Ala Thr Glu Glu	
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Ser Thr Val Pro Thr Thr Gln Ser Ser Ala Met Leu Ala Thr Lys Ala	
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Ser Leu Lys Ile Val His Arg Asn Leu Lys Leu Glu Asn Leu Val Tyr  
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Pro Pro Phe Tyr Glu Glu Val Glu Glu Asp Asp Tyr Glu Asn His Asp				
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Lys Asn Leu Phe Arg Lys Ile Leu Ala Gly Asp Tyr Glu Phe Asp Ser				
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Ser His Glu Trp Ile Ser Gly Asn Ala Ala Ser Asp Lys Asn Ile Lys				
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Asp Gly Val Cys Ala Gln Ile Glu Lys Asn Phe Ala Arg Ala Lys Trp				
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Lys Lys Ala Val Arg Val Thr Thr Leu Met Lys Arg Leu Arg Ala Pro				
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362	367	372	377	
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Asn Val Ala Pro Ala Asp Arg Ser Ala Thr Pro Ala Thr Asp Gly Ser				
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Ala Thr Pro Ala Thr Asp Gly Ser Val Thr Pro Ala Thr Asp Gly Ser				
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Ile Thr Pro Ala Thr Asp Gly Ser Val Thr Pro Ala Thr Asp Arg Ser				
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Glu Asp Asn Leu Ser Ala Thr Pro Pro Ala Leu Arg Ile Ile Leu Val	
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Gly Lys Thr Gly Cys Gly Lys Ser Ala Thr Gly Asn Ser Ile Leu Gly	
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Gln Pro Val Phe Glu Ser Lys Leu Arg Ala Gln Ser Val Thr Arg Thr	
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Cys Gln Val Lys Thr Gly Thr Trp Asn Gly Arg Lys Val Leu Val Val	
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Asp Thr Pro Ser Ile Phe Glu Ser Gln Ala Asp Thr Gln Glu Leu Tyr	
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Lys Asn Ile Gly Asp Cys Tyr Leu Leu Ser Ala Pro Gly Pro His Val	
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Ala Ile Arg Lys Val Lys Glu Val Phe Gly Thr Gly Ala Met Arg His	
130 135 140 145	
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Val Val Ile Leu Phe Thr His Lys Glu Asp Leu Gly Gly Gln Ala Leu	
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Asp Asp Tyr Val Ala Asn Thr Asp Asn Cys Ser Leu Lys Asp Leu Val	
162 167 172 177	
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Arg Glu Cys Glu Arg Arg Tyr Cys Ala Phe Asn Asn Trp Gly Ser Val	
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Glu Glu Gln Arg Gln Gln Gln Ala Glu Leu Leu Ala Val Ile Glu Arg	
194 199 204 209	
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Asp Ala Gln Leu Leu Gln Arg Thr Gly Val Gly Ala Cys Gln Glu Asp	
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Tyr Arg Gln Tyr Gln Ala Lys Val Glu Trp Gln Val Glu Lys His Lys	
242 247 252 257	
caa gag ctg agg gag aac gag agt aac tgg gca tac aag gcg ctc ctc	1173
Gln Glu Leu Arg Glu Asn Glu Ser Asn Trp Ala Tyr Lys Ala Leu Leu	
258 263 268 273	
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Arg Val Lys His Leu Met Leu Leu His Tyr Glu Ile Phe Val Phe Leu	
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Leu Leu Cys Ser Ile Leu Phe Phe Ile Ile Phe Leu Phe Ile Phe His	
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agt gcc aag gat gct aac gag aat tgg cat ggg atg cca ggc aga gtg      318
Ser Ala Lys Asp Ala Asn Glu Asn Trp His Gly Met Pro Gly Arg Val
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Glu Pro Ile Leu Arg Arg Ser Ser Ser Glu Ser Pro Ser Asp Asn Gln
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gag ggg gca gag att ccc ggg gct gag cct gag aag atg ggt ggt gct      462
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Pro Arg Gly Pro Gly Pro Pro Asp Pro Leu Leu Pro Ser Val Ala Gln
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gct gtg cag cac tta caa gtc cag gag cgc tac aaa gag cag gag aag      654
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Pro Gly Leu Ala Glu Gly Gly Gln Phe Leu Gly Asp Pro Pro Pro Gly
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Ser Ala Lys Asp Ala Asn Glu Asn Trp His Gly Met Pro Gly Arg Val
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gaa cct atc ctg agg agg agc tcc tct gag tca ccc tct gac aac caa      366
Glu Pro Ile Leu Arg Arg Ser Ser Ser Glu Ser Pro Ser Asp Asn Gln
  54              59              64              69

gcc ttc cag gcc cct gga tcc cct gag gaa ggg gtg cgc agc ccc cca      414
Ala Phe Gln Ala Pro Gly Ser Pro Glu Glu Gly Val Arg Ser Pro Pro
  70              75              80              85

gag ggg gca gag att ccc ggg gct gag cct gag aag atg ggt ggt gct      462
Glu Gly Ala Glu Ile Pro Gly Ala Glu Pro Glu Lys Met Gly Gly Ala
  86              91              96              101

ggc aca gtc tgc tcc cct ctg gag gac aac ggc tat gcc agc agt tcc      510
Gly Thr Val Cys Ser Pro Leu Glu Asp Asn Gly Tyr Ala Ser Ser Ser
  102              107              112              117

ctg agc att gac agc cgt agc agc agt cct gag cct gcc tgt ggg acc      558
Leu Ser Ile Asp Ser Arg Ser Ser Ser Pro Glu Pro Ala Cys Gly Thr
  118              123              128              133

ccg cga ggc cct ggc cct ccc gat ccc ctt ctg ccc tca gtg gcc cag      606
Pro Arg Gly Pro Gly Pro Pro Asp Pro Leu Leu Pro Ser Val Ala Gln
  134              139              144              149

gct gtg cag cac tta caa gtc cag gag cgc tac aaa gag cag gag aag      654
Ala Val Gln His Leu Gln Val Gln Glu Arg Tyr Lys Glu Gln Glu Lys
  150              155              160              165

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gaa aag cac cac gtg cac ttg gtg atg tac cgt cgc ctg gca ctg ctc	702
Glu Lys His His Val His Leu Val Met Tyr Arg Arg Leu Ala Leu Leu	
166 171 176 181	
cag tgg atc cgg ggc ctg cag cat cag ttg att gac cag cag gcc cga	750
Gln Trp Ile Arg Gly Leu Gln His Gln Leu Ile Asp Gln Gln Ala Arg	
182 187 192 197	
ctg cag gag agc ttc gac acc atc cta gac aac cgg aag gag ctt att	798
Leu Gln Glu Ser Phe Asp Thr Ile Leu Asp Asn Arg Lys Glu Leu Ile	
198 203 208 213	
cgc tgt ctc cag cag agg gca gca cca tcc agg ccc cag gac cag gcc	846
Arg Cys Leu Gln Gln Arg Ala Ala Pro Ser Arg Pro Gln Asp Gln Ala	
214 219 224 229	
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*	
230	
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cccaaacaaa ccatctctcc attggaaaag gagctgttgc aaaccgtgtt catttaagct	1923
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 gacaggtgga tgggtgaaag atccagagag tgggggtgag ggggtgggccc tgaagacttt 2523  
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 gcaggtctgt gagcttcgtc tccctttcct tcttcgcagt gtactaatgg tcaacttg 177  
 atg tgc gct ggc tgt ttt atc cac cta cta gca gat gcc cgg ctg aag 225  
 Met Cys Ala Gly Cys Phe Ile His Leu Leu Ala Asp Ala Arg Leu Lys  
 1 5 10 15  
  
 gag gag cag gcc acg tgc ccc aat tgt cgt tgt gag atc agt aag agc 273  
 Glu Glu Gln Ala Thr Cys Pro Asn Cys Arg Cys Glu Ile Ser Lys Ser  
 17 22 27 32  
  
 ctc tgc tgc cgg aac ctg gcc gtg gag aaa gcc gtg agc gag ctg cct 321  
 Leu Cys Cys Arg Asn Leu Ala Val Glu Lys Ala Val Ser Glu Leu Pro  
 33 38 43 48  
  
 tca gag tgt ggc ttc tgc ctg cgc cag ttt ccc cgc tcc ctc ctg gag 369  
 Ser Glu Cys Gly Phe Cys Leu Arg Gln Phe Pro Arg Ser Leu Leu Glu  
 49 54 59 64  
  
 agg cac cag aaa gag gaa tgc cag gac agg gta acc cag tgc aag tac 417

Arg	His	Gln	Lys	Glu	Glu	Cys	Gln	Asp	Arg	Val	Thr	Gln	Cys	Lys	Tyr	
65					70					75					80	
aaa	cgc	atc	ggc	tgc	cca	tgg	cac	ggc	ccc	ttc	cat	gag	ctg	acg	gtg	465
Lys	Arg	Ile	Gly	Cys	Pro	Trp	His	Gly	Pro	Phe	His	Glu	Leu	Thr	Val	
81					86					91					96	
cac	gag	gct	gcg	tgc	gcc	cac	ccg	acc	aag	aca	ggc	agt	gag	ctg	atg	513
His	Glu	Ala	Ala	Cys	Ala	His	Pro	Thr	Lys	Thr	Gly	Ser	Glu	Leu	Met	
97					102					107					112	
gag	atc	ctg	gat	ggg	atg	gac	cag	agc	cac	cgc	aag	gag	atg	cag	ctg	561
Glu	Ile	Leu	Asp	Gly	Met	Asp	Gln	Ser	His	Arg	Lys	Glu	Met	Gln	Leu	
113					118					123					128	
tac	aac	agc	atc	ttc	agc	ctg	ctc	agc	ttc	gag	aag	att	ggc	tac	aca	609
Tyr	Asn	Ser	Ile	Phe	Ser	Leu	Leu	Ser	Phe	Glu	Lys	Ile	Gly	Tyr	Thr	
129					134					139					144	
gag	gtc	cag	ttc	cgg	ccg	tac	cgc	aca	gac	gac	ttc	atc	acg	cgc	ctg	657
Glu	Val	Gln	Phe	Arg	Pro	Tyr	Arg	Thr	Asp	Asp	Phe	Ile	Thr	Arg	Leu	
145					150					155					160	
tac	tat	gag	acg	ccc	agg	ttc	aca	gtg	ctg	aac	cag	acg	tgg	gtc	ctg	705
Tyr	Tyr	Glu	Thr	Pro	Arg	Phe	Thr	Val	Leu	Asn	Gln	Thr	Trp	Val	Leu	
161					166					171					176	
aag	gct	cga	gtc	aac	gac	tgc	gag	cgt	aac	ccc	aac	ctg	tcc	tgc	aag	753
Lys	Ala	Arg	Val	Asn	Asp	Ser	Glu	Arg	Asn	Pro	Asn	Leu	Ser	Cys	Lys	
177					182					187					192	
cgt	acg	ctc	tcc	ttc	cag	ctc	ctc	ctc	aag	agc	aag	gtc	acg	gca	ccg	801
Arg	Thr	Leu	Ser	Phe	Gln	Leu	Leu	Leu	Lys	Ser	Lys	Val	Thr	Ala	Pro	
193					198					203					208	
ctg	gag	tgc	tcc	ttc	ctg	ctg	ctc	aag	ggc	ccc	tac	gac	gac	gtg	agg	849
Leu	Glu	Cys	Ser	Phe	Leu	Leu	Leu	Lys	Gly	Pro	Tyr	Asp	Asp	Val	Arg	
209					214					219					224	
atc	agc	ccc	gtc	atc	tac	cac	ttt	gtc	ttc	acc	aac	gag	agc	aac	gag	897
Ile	Ser	Pro	Val	Ile	Tyr	His	Phe	Val	Phe	Thr	Asn	Glu	Ser	Asn	Glu	
225					230					235					240	
acg	gac	tac	gtg	cca	ctg	ccc	atc	att	gac	tcc	gtg	gag	tgc	aac	aag	945
Thr	Asp	Tyr	Val	Pro	Leu	Pro	Ile	Ile	Asp	Ser	Val	Glu	Cys	Asn	Lys	
241					246					251					256	
ctg	ctg	gct	gcc	aag	aac	atc	aac	ctg	cgg	ctc	ttc	ctg	ttc	cag	ata	993
Leu	Leu	Ala	Ala	Lys	Asn	Ile	Asn	Leu	Arg	Leu	Phe	Leu	Phe	Gln	Ile	
257					262					267					272	
cag	aag	tag	ggcgggg	cctcaggatg	tccgaggagc	ccacggggcgg	catcccagca									1049
Gln	Lys	*														
273																
ccgctgccct	gtccacctgg	ctggcagctg	cttcacagga	ctatctgatc	acttttagcaa											1109

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cgctccggc tcaccccccc gaccctgcc tcccctcctt ccgagggccg ccagaggctg	1229
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tgctccatcc ctgcgggttc cggcgggggcg cgggggcctt gctgacatca gacgggatat	1409
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tgacctggtt gtccacgcgg atgttcgaaa ctcccaggat ggagagaaaa acagagcagg	180
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cggagccact gcgaggacat tgatgagtgt gacttccctg cagcctgcat tgggggtgac	360
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ctgaacttcg atgacacagt gttctgcgac agcgtattgg ccaccaacgt gaccagcag	660
gagtgtgct gctctctggg ggccggctgg ggcgaccact gcgaaatcta cccctgcccc	720
gtctacagct cagccgagtt ccacagcctc tgcccagacg gaaagggcta caccaggac	780
aacaacatcg tcaactacgg catcccagcc caccgtgaca tcgacgagtg c atg ttg	837
	Met Leu

1

ttc ggg tcg gag att tgc aag gag ggc aag tgc gtg aac acg cag cct	885
Phe Gly Ser Glu Ile Cys Lys Glu Gly Lys Cys Val Asn Thr Gln Pro	



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ccc ggc ggc ttc cag ctc gac gcc tcc cgc gcc cgc tgc gtg gat atc      1605
Pro Gly Gly Phe Gln Leu Asp Ala Ser Arg Ala Arg Cys Val Asp Ile
243                      248                      253                      258

gac gag tgc cga gag ctg aac cag cgc ggc ctg ctg tgc aag agc gag      1653
Asp Glu Cys Arg Glu Leu Asn Gln Arg Gly Leu Leu Cys Lys Ser Glu
259                      264                      269                      274

cgc tgc gtg aac acc agc ggc tcc ttc cgc tgc gtc tgc aaa gcc ggc      1701
Arg Cys Val Asn Thr Ser Gly Ser Phe Arg Cys Val Cys Lys Ala Gly
275                      280                      285                      290

ttc gcg cgc agc cgc ccg cac ggc gcc tgc gtt ccc cag cgc cgc cgc      1749
Phe Ala Arg Ser Arg Pro His Gly Ala Cys Val Pro Gln Arg Arg Arg
291                      296                      301                      306

tga cgcc gccgacgccg ccctcggccc agacctcggt gatcactgag ggatttcgc      1806
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307

gagctcggcc tcacttctgc cccgacttgt ggctcggacc cagggacctt cagggcccgc      1866

agaccctccc ggcgccttga gacccgaggc gccctaccg gccccctcc ccggttagcg      1926

ggcggttgta aggtctccgg cgggcgctgc ctgccttcct cccagagggt gtttcctaga      1986

aactgataaa tcagatcgtg cctctttacc cttggctttc gaagcaaatt gatgttcacg      2046

tctgacgtgg ggcgcgggctg cgcagggcgg cgccagacct caaccgcctc ccaggggcta      2106

gactgagccc ggcccaaggg gtgtgaaata gaatttattg tggctctgat tatgtacacg      2166

tgaaatggcc tggctgggccc ggccgggctc acatggtttg tacaataaat acatctgtgg      2226

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ccgagcgggc ccgttcgcc ggagctgagg accaggtatt caaataaagt taattgcagc      180

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Met Ser Val Leu Ile Ser Gln Ser Val Ile Asn Tyr Val	
1 5 10	
 gag gaa gaa aac att cct gct ctg aaa gct ctt ctt gaa aaa tgc aaa	278
Glu Glu Glu Asn Ile Pro Ala Leu Lys Ala Leu Leu Glu Lys Cys Lys	
14 19 24 29	
 gat gta gat gag aga aat gag tgt ggc cag act cca ctg atg ata gct	326
Asp Val Asp Glu Arg Asn Glu Cys Gly Gln Thr Pro Leu Met Ile Ala	
30 35 40 45	
 gcc gaa caa ggc aat ctg gaa ata gtg aag gaa tta att aag aat gga	374
Ala Glu Gln Gly Asn Leu Glu Ile Val Lys Glu Leu Ile Lys Asn Gly	
46 51 56 61	
 gct aac tgc aat ctg gaa gat ttg gat aat tgg aca gca ctt ata tct	422
Ala Asn Cys Asn Leu Glu Asp Leu Asp Asn Trp Thr Ala Leu Ile Ser	
62 67 72 77	
 gca tcg aaa gaa ggg cat gtg cac atc gta gag gaa cta ctg aaa tgt	470
Ala Ser Lys Glu Gly His Val His Ile Val Glu Glu Leu Leu Lys Cys	
78 83 88 93	
 ggg gtt aac ttg gag cac cgt gat atg gga gga tgg aca gct ctt atg	518
Gly Val Asn Leu Glu His Arg Asp Met Gly Gly Trp Thr Ala Leu Met	
94 99 104 109	
 tgg gca tgt tac aaa ggc cgt act gac gta gta gag ttg ctt ctt tct	566
Trp Ala Cys Tyr Lys Gly Arg Thr Asp Val Val Glu Leu Leu Leu Ser	
110 115 120 125	
 cat ggt gcc aat cca agt gtc act ggt ctg cag tac agt gtt tac cca	614
His Gly Ala Asn Pro Ser Val Thr Gly Leu Gln Tyr Ser Val Tyr Pro	
126 131 136 141	
 atc att tgg gca gca ggg aga ggc cat gca gat ata gtt cat ctt tta	662
Ile Ile Trp Ala Ala Gly Arg Gly His Ala Asp Ile Val His Leu Leu	
142 147 152 157	
 ctg caa aat ggt gct aaa gtc aac tgc tct gat aag tat gga acc acc	710
Leu Gln Asn Gly Ala Lys Val Asn Cys Ser Asp Lys Tyr Gly Thr Thr	
158 163 168 173	
 cct tta gtt tgg gct gca cga aag ggt cat ttg gaa tgt gtg aaa cat	758
Pro Leu Val Trp Ala Ala Arg Lys Gly His Leu Glu Cys Val Lys His	
174 179 184 189	
 tta ttg gcc atg gga gct gat gtg gat caa gaa gga gct aat tca atg	806
Leu Leu Ala Met Gly Ala Asp Val Asp Gln Glu Gly Ala Asn Ser Met	
190 195 200 205	
 act gca ctt att gtg gca gtg aaa gga ggt tac aca cag tca gta aaa	854
Thr Ala Leu Ile Val Ala Val Lys Gly Gly Tyr Thr Gln Ser Val Lys	
206 211 216 221	

gaa att ttg aag agg aat cca aat gta aac tta aca gat aaa gat gga	902
Glu Ile Leu Lys Arg Asn Pro Asn Val Asn Leu Thr Asp Lys Asp Gly	
222 227 232 237	
aat aca gct ttg atg att gca tca aag gag gga cat acg gag att gtg	950
Asn Thr Ala Leu Met Ile Ala Ser Lys Glu Gly His Thr Glu Ile Val	
238 243 248 253	
cag gat ctg ctc gac gct gga aca tat gtg aac ata cct gac agg agt	998
Gln Asp Leu Leu Asp Ala Gly Thr Tyr Val Asn Ile Pro Asp Arg Ser	
254 259 264 269	
ggg gat act gtg ttg att ggc gct gtc aga ggt ggt cat gtt gaa att	1046
Gly Asp Thr Val Leu Ile Gly Ala Val Arg Gly Gly His Val Glu Ile	
270 275 280 285	
gtt cga gcg ctt ctc caa aaa tat gct gat ata gac att aga gga cag	1094
Val Arg Ala Leu Leu Gln Lys Tyr Ala Asp Ile Asp Ile Arg Gly Gln	
286 291 296 301	
gat aat aaa act gct ttg tat tgg gct gtt gag aaa gga aat gca aca	1142
Asp Asn Lys Thr Ala Leu Tyr Trp Ala Val Glu Lys Gly Asn Ala Thr	
302 307 312 317	
atg gtg aga gat atc tta cag tgc aat cct gac act gaa ata tgc aca	1190
Met Val Arg Asp Ile Leu Gln Cys Asn Pro Asp Thr Glu Ile Cys Thr	
318 323 328 333	
aag gat ggt gaa acg cca ctt ata aag gct acc aag atg aga aac att	1238
Lys Asp Gly Glu Thr Pro Leu Ile Lys Ala Thr Lys Met Arg Asn Ile	
334 339 344 349	
gaa gtg gtg gag ctg ctg cta gat aaa ggt gct aaa gtg tct gct gta	1286
Glu Val Val Glu Leu Leu Leu Asp Lys Gly Ala Lys Val Ser Ala Val	
350 355 360 365	
gat aag aaa gga gat act ccc ttg cat att gct att cgt gga agg agc	1334
Asp Lys Lys Gly Asp Thr Pro Leu His Ile Ala Ile Arg Gly Arg Ser	
366 371 376 381	
cgg aaa ctg gca gaa ctg ctt tta aga aat ccc aaa gat ggg cga tta	1382
Arg Lys Leu Ala Glu Leu Leu Leu Arg Asn Pro Lys Asp Gly Arg Leu	
382 387 392 397	
ctt tat agg ccc aac aaa gca ggc gag act cct tat aat att gac tgt	1430
Leu Tyr Arg Pro Asn Lys Ala Gly Glu Thr Pro Tyr Asn Ile Asp Cys	
398 403 408 413	
agc cat cag aag agt att tta act caa ata ttt gga gcc aga cac ttg	1478
Ser His Gln Lys Ser Ile Leu Thr Gln Ile Phe Gly Ala Arg His Leu	
414 419 424 429	
tct cct act gaa aca gac ggt gac atg ctt gga tat gat tta tat agc	1526
Ser Pro Thr Glu Thr Asp Gly Asp Met Leu Gly Tyr Asp Leu Tyr Ser	
430 435 440 445	
agt gcc ctg gca gat att ctc agt gag cct acc atg cag cca ccc att	1574



Ser	Ala	Leu	Ala	Asp	Ile	Leu	Ser	Glu	Pro	Thr	Met	Gln	Pro	Pro	Ile		
446					451					456					461		
tgt	gtg	ggg	tta	tat	gca	cag	tgg	gga	agt	ggg	aaa	tct	ttc	tta	ctc		1622
Cys	Val	Gly	Leu	Tyr	Ala	Gln	Trp	Gly	Ser	Gly	Lys	Ser	Phe	Leu	Leu		
462					467					472					477		
aag	aaa	cta	gaa	gac	gaa	atg	aaa	acc	ttc	gcc	gga	caa	cag	att	gag		1670
Lys	Lys	Leu	Glu	Asp	Glu	Met	Lys	Thr	Phe	Ala	Gly	Gln	Gln	Ile	Glu		
478					483					488					493		
cct	ctc	ttt	cag	ttc	tca	tgg	ctc	ata	gtg	ttt	ctt	acc	ctg	cta	ctt		1718
Pro	Leu	Phe	Gln	Phe	Ser	Trp	Leu	Ile	Val	Phe	Leu	Thr	Leu	Leu	Leu		
494					499					504					509		
tgt	gga	ggg	ctt	ggt	tta	ttg	ttt	gcc	ttc	acg	gtc	cac	cca	aat	ctt		1766
Cys	Gly	Gly	Leu	Gly	Leu	Leu	Phe	Ala	Phe	Thr	Val	His	Pro	Asn	Leu		
510					515					520					525		
gga	ata	gca	gtg	tca	ctg	agc	ttc	ttg	gct	ctc	tta	tat	ata	ttc	ttt		1814
Gly	Ile	Ala	Val	Ser	Leu	Ser	Phe	Leu	Ala	Leu	Leu	Tyr	Ile	Phe	Phe		
526					531					536					541		
att	gtc	att	tac	ttt	ggt	gga	cga	aga	gaa	gga	gag	agt	tgg	aat	tgg		1862
Ile	Val	Ile	Tyr	Phe	Gly	Gly	Arg	Arg	Glu	Gly	Glu	Ser	Trp	Asn	Trp		
542					547					552					557		
gcc	tgg	gtc	ctc	agc	act	aga	ttg	gca	aga	cat	att	gga	tat	ttg	gaa		1910
Ala	Trp	Val	Leu	Ser	Thr	Arg	Leu	Ala	Arg	His	Ile	Gly	Tyr	Leu	Glu		
558					563					568					573		
ctc	ctc	ctt	aaa	ttg	atg	ttt	gtg	aat	cca	cct	gag	ttg	cca	gag	cag		1958
Leu	Leu	Leu	Lys	Leu	Met	Phe	Val	Asn	Pro	Pro	Glu	Leu	Pro	Glu	Gln		
574					579					584					589		
act	act	aaa	gct	tta	cct	gtg	agg	ttt	ttg	ttt	aca	gat	tac	aat	aga		2006
Thr	Thr	Lys	Ala	Leu	Pro	Val	Arg	Phe	Leu	Phe	Thr	Asp	Tyr	Asn	Arg		
590					595					600					605		
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Lys	Thr	Cys	Cys	Leu	Pro	Ser	Phe	Val	Ile	Phe	Leu	Phe	Ile	Ile	Gly		
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Val Glu Leu Met Ala	Arg Met Ala Lys Thr	Ile Asp Ser Phe Thr	Gln	
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Gln Asp Lys Val Leu	Gln Met Leu Asp Thr	Val Arg Val Leu Phe	Ser	
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Lys Gly Pro Phe Ile	Ala Ile Phe Ala Ser	Asp Pro His Ile Ile	Ile	
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Lys Ala Ile Asn Gln	Asn Leu Asn Ser Val	Leu Arg Asp Ser Asn	Ile	
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Ala Asp Arg Arg Val	Ser Gln Asn Ser Leu	Gly Glu Met Thr Lys	Leu	
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Gly Ser Lys Thr Ala	Leu Asn Arg Arg Asp	Thr Tyr Arg Arg Arg	Gln	
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Ser Leu Arg Cys Ala Asp Leu Thr Leu Pro Glu Asp Ile Ser Gln Leu		
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Tyr	Gln	Leu	Asn	Arg	Ile	Ile	Leu	Phe	Asp	Arg	Leu	Leu	Lys	Ala	Tyr	
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Ala	Ile	His	Ala	Lys	Tyr	Asp	Ala	Ile	Asp	Lys	Asp	Thr	Pro	Ile	Pro	
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Lys	Ala	Trp	Val	Val	Ser	His	Pro	Asp	Leu	Val	Tyr	Trp	Gln	Gly	Leu	

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Asp Ser Leu Cys Ala Pro Phe Leu Tyr Leu Asn Phe Asn Asn Glu Ala				
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Leu Ala Tyr Ala Cys Met Ser Ala Phe Ile Pro Lys Tyr Leu Tyr Asn				
298	303	308	313	
ttc ttc tta aaa gac aac tca cat gta ata caa gag tat ctg act gtc				1251
Phe Phe Leu Lys Asp Asn Ser His Val Ile Gln Glu Tyr Leu Thr Val				
314	319	324	329	
ttc tct cag atg att gca ttt cat gat cca gag ctg agt aat cat ctc				1299
Phe Ser Gln Met Ile Ala Phe His Asp Pro Glu Leu Ser Asn His Leu				
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aat gag att ggt ttc att cca gat ctc tat gcc atc cct tgg ttt ctt				1347
Asn Glu Ile Gly Phe Ile Pro Asp Leu Tyr Ala Ile Pro Trp Phe Leu				
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acc atg ttt act cat gta ttt cca cta cac aaa att ttc cac ctc tgg				1395
Thr Met Phe Thr His Val Phe Pro Leu His Lys Ile Phe His Leu Trp				
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gat acc tta cta ctt ggg aat tcc tct ttc cca ttc tgt att ggg agt				1443
Asp Thr Leu Leu Leu Gly Asn Ser Ser Phe Pro Phe Cys Ile Gly Ser				
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agc aat tct tca ggc agc tgc ggg acc ggc ttt tgg gct aat ggc ttt				1491
Ser Asn Ser Ser Gly Ser Cys Gly Thr Gly Phe Trp Ala Asn Gly Phe				
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aat gag tgt att ctt ctc ttc tcc gat tta cca gaa att gac att gaa				1539
Asn Glu Cys Ile Leu Leu Phe Ser Asp Leu Pro Glu Ile Asp Ile Glu				
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Arg Cys Val Arg Glu Ser Ile Asn Leu Phe Cys Trp Thr Pro Lys Ser				
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Ser Gly Gly Arg Ser Ser Ala Pro Tyr Phe Ser Ala Glu Cys Pro Asp				
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cct cca aag aca gat ctg tca aga gaa tcc atc cca tta aat gac ctg				1731
Pro Pro Lys Thr Asp Leu Ser Arg Glu Ser Ile Pro Leu Asn Asp Leu				
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Lys Ser Glu Val Ser Pro Arg Ile Ser Ala Glu Asp Leu Ile Asp Leu				
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Leu Asp Pro Gly Thr Arg Asp Ser Tyr Gly Ala Thr Ser His Leu Pro
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Asn Lys Gly Ala Leu Ala Lys Val Lys Asn Asn Phe Lys Asp Leu Met
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tcc aaa ctg acg gag ggc cag tat gtg ctg tgc cgg tgg aca gat ggc   198
Ser Lys Leu Thr Glu Gly Gln Tyr Val Leu Cys Arg Trp Thr Asp Gly
 38                      43                      48                      53

ctg tac tac ctc ggg aag atc aag agg gtc agc agc tct aag caa agc   246
Leu Tyr Tyr Leu Gly Lys Ile Lys Arg Val Ser Ser Ser Lys Gln Ser
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Cys Leu Val Thr Phe Glu Asp Asn Ser Lys Tyr Trp Val Leu Trp Lys
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Asp Ile Gln His Ala Gly Val Pro Gly Glu Glu Pro Lys Cys Asn Ile
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Cys Leu Gly Lys Thr Ser Gly Pro Leu Asn Glu Ile Leu Ile Cys Gly
102                      107                      112                      117

aag tgt ggc ctg ggt tac cac cag cag tgc cac atc ccc ata gcg ggc   438
Lys Cys Gly Leu Gly Tyr His Gln Gln Cys His Ile Pro Ile Ala Gly
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agt gct gac cag ccc ctg ctc aca cct tgg ttc tgc cga cgc tgc atc   486
Ser Ala Asp Gln Pro Leu Leu Thr Pro Trp Phe Cys Arg Arg Cys Ile
134                      139                      144                      149

ttc gca ctg gct gtg cgg aaa ggc ggc gcg ctg aag aag ggc gcc atc   534
Phe Ala Leu Ala Val Arg Lys Gly Gly Ala Leu Lys Lys Gly Ala Ile
150                      155                      160                      165

gcc agg acg ctg cag gcc gtg aag atg gtg ctg tcc tac cag ccc gag   582
Ala Arg Thr Leu Gln Ala Val Lys Met Val Leu Ser Tyr Gln Pro Glu
166                      171                      176                      181

gag ctc gag tgg gac tcg ccc cat cgc acc aac cag cag caa tgc tac   630
Glu Leu Glu Trp Asp Ser Pro His Arg Thr Asn Gln Gln Gln Cys Tyr
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Cys Tyr Cys Gly Gly Pro Gly Glu Trp Tyr Leu Arg Met Leu Gln Cys				
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tac cgg tgc agg cag tgg ttc cac gag gcc tgc acc cag tgc ctc aat				726
Tyr Arg Cys Arg Gln Trp Phe His Glu Ala Cys Thr Gln Cys Leu Asn				
214	219	224	229	
gag ccc atg atg ttt gga gac cgg ttt tac ctg ttc ttc tgc tcc gtg				774
Glu Pro Met Met Phe Gly Asp Arg Phe Tyr Leu Phe Phe Cys Ser Val				
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Cys Asn Gln Gly Pro Glu Tyr Ile Glu Arg Leu Pro Leu Arg Trp Val				
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Asp Val Val His Leu Ala Leu Tyr Asn Leu Gly Val Gln Ser Lys Lys				
262	267	272	277	
aag tac ttt gac ttt gag gag att ctg gcc ttt gtc aac cac cac tgg				918
Lys Tyr Phe Asp Phe Glu Glu Ile Leu Ala Phe Val Asn His His Trp				
278	283	288	293	
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Glu Leu Leu Gln Leu Gly Lys Leu Thr Ser Thr Pro Val Thr Asp Arg				
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Arg Val Pro Pro Asn Pro Pro Gly Lys Leu Leu Pro Asp Lys Gly Leu				
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ctg cca aat gag aac agc gcc tcc tct gag ctg cgt aag aga gga aag				1158
Leu Pro Asn Glu Asn Ser Ala Ser Ser Glu Leu Arg Lys Arg Gly Lys				
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Ser Lys Pro Gly Leu Leu Pro His Glu Phe Gln Gln Gln Lys Arg Arg				
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gtt tat aga aga aaa aga tca aag ttt ttg ctg gaa gat gct att ccc				1254
Val Tyr Arg Arg Lys Arg Ser Lys Phe Leu Leu Glu Asp Ala Ile Pro				
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Ser Ser Asp Phe Thr Ser Ala Trp Ser Thr Asn His His Leu Ala Ser				
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Val Gly Ser Arg Lys Arg Lys Leu Ala Ala Lys Ala Tyr Met Pro Leu	
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Asp Ser His Thr Phe Glu Ser Ile Ser Glu Asp Asp Ser Ser Leu Ser	
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12 17 22 27
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Pro Pro Cys Phe Ser His Lys Thr Trp Val Phe Ser Val Leu Met Gly
44 49 54 59
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Ser Cys Leu Leu Val Thr Ser Gly Phe Ser Leu Tyr Leu Gly Asn Val
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Phe Ile Gly Gly Ser Phe Ile Leu Lys Lys Lys Gly Leu Leu Arg Leu  
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gcc agg aaa ggc tct atg aga gca ggt caa ggt ggc cat gca tat ctt 496  
Ala Arg Lys Gly Ser Met Arg Ala Gly Gln Gly Gly His Ala Tyr Leu  
39 44 49 54

aag gaa tgg ttg tgg tgg gct gga ctg ctg tca atg gga gct ggt gag 544  
Lys Glu Trp Leu Trp Trp Ala Gly Leu Leu Ser Met Gly Ala Gly Glu  
55 60 65 70

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Val Ala Asn Phe Ala Ala Tyr Ala Phe Ala Pro Ala Thr Leu Val Thr  
71 76 81 86

cca cta gga gct ctc agc gtg cta gta agt gcc att ctt tct tca tac 640  
Pro Leu Gly Ala Leu Ser Val Leu Val Ser Ala Ile Leu Ser Ser Tyr  
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151 156 161 166

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Thr Ile Cys Ser Val Ile Gly Ala Phe Ser Val Ser Cys Val Lys Gly  
183 188 193 198

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Cys Ser Ala Ile Leu Phe Lys Glu Trp Gln Asp Met Pro Val Asp Asp	
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Val Ile Gly Thr Leu Ser Gly Phe Phe Thr Ile Ile Val Gly Ile Phe	
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Met Tyr Glu Val Leu Asn Asn Asn Glu Glu Ser Leu Thr Cys Gly Ile	
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Ala Phe *	
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Arg Arg Lys Gln Ser His Pro Gln Pro Val Lys Cys Glu Gly Val Lys  
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Val Asp Thr Glu Asp Ser Leu Asp Glu Gly Pro Gly Ala Leu Val Leu  
19 24 29 34  
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Glu Ser Asp Leu Leu Leu Gly Gln Asp Leu Glu Phe Glu Glu Glu Glu  
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Gly Leu Ser Asp Asp Glu Ser Gly Gly Gly Arg Ala Leu Ser Ala Glu  
83 88 93 98  
agt gaa gtt gag gag cca gcc agg ggt cca ggg gag gcc agg ggt gag 391  
Ser Glu Val Glu Glu Pro Ala Arg Gly Pro Gly Glu Ala Arg Gly Glu  
99 104 109 114



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Arg Pro Gly Pro Ala Cys Gln Leu Cys Gly Gly Pro Thr Asp Leu Ser	
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Leu His Val Pro Pro Gly Gly Ala Ser Phe Leu Pro Asp Cys Gly Gln	
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Ser Asp Lys Gly Phe Ala Cys Ser Leu Cys Pro Phe Ala Thr His Tyr	
211 216 221 226	
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Ser Cys Asn Gln Ser Met Asn Leu Lys Arg His Met Leu Arg His Thr	
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Gly Ser Trp Ala Asp Arg Ser Pro Leu His Glu Ala Ala Ser Gln Gly
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cgc ctt ctt gct ctg aga aca tta tta tca cag ggt tat aat gta aat      266
Arg Leu Leu Ala Leu Arg Thr Leu Leu Ser Gln Gly Tyr Asn Val Asn
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gca gta acc tta gac cat gtc acc cca ttg cac gaa gcc tgc ctt gga      314
Ala Val Thr Leu Asp His Val Thr Pro Leu His Glu Ala Cys Leu Gly
  45             50             55             60

gat cac gtg gca tgt gcc aga act ctg ctg gaa gca gga gct aat gta      362
Asp His Val Ala Cys Ala Arg Thr Leu Leu Glu Ala Gly Ala Asn Val
  61             66             71             76

aat gca atc acg ata gat ggc gtg act ccg tta ttc aac gca tgc tcc      410
Asn Ala Ile Thr Ile Asp Gly Val Thr Pro Leu Phe Asn Ala Cys Ser
  77             82             87             92

caa ggc agt cca agc tgt gca gag ctg ctt ctg gag tat ggt gcc aaa      458
Gln Gly Ser Pro Ser Cys Ala Glu Leu Leu Leu Glu Tyr Gly Ala Lys
  93             98             103            108

gcc cag ctg gag tca tgt ctt cca tcc cca acg cat gag gcc gcc agt      506
Ala Gln Leu Glu Ser Cys Leu Pro Ser Pro Thr His Glu Ala Ala Ser
  109            114            119            124

aaa ggt cac cat gaa tgt ctt gac atc ctg ata tcc tgg ggc ata gat      554
Lys Gly His His Glu Cys Leu Asp Ile Leu Ile Ser Trp Gly Ile Asp
  125            130            135            140

gtt gac caa gaa att cct cat ttg gga act cct ctc tat gta gct tgt      602
Val Asp Gln Glu Ile Pro His Leu Gly Thr Pro Leu Tyr Val Ala Cys
  141            146            151            156

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atg tca cag caa ttc cat tgc atc tgg aag ctt ctt tat gct ggt gct	650
Met Ser Gln Gln Phe His Cys Ile Trp Lys Leu Leu Tyr Ala Gly Ala	
157 162 167 172	
gac gta cag aaa ggc aaa tat tgg gat act cca tta cat gct gct gct	698
Asp Val Gln Lys Gly Lys Tyr Trp Asp Thr Pro Leu His Ala Ala Ala	
173 178 183 188	
caa caa tcc agc aca gaa att gta aac tta ctg cta gaa ttt gga gca	746
Gln Gln Ser Ser Thr Glu Ile Val Asn Leu Leu Leu Glu Phe Gly Ala	
189 194 199 204	
gat atc aat gcc aaa aat aca gag ctt ctg cga cct tata gat gta gct	794
Asp Ile Asn Ala Lys Asn Thr Glu Leu Leu Arg Pro Ile Asp Val Ala	
205 210 215 220	
acg tct agc agt atg gtg gaa aga ata ttg ctt caa cat gaa gct acc	842
Thr Ser Ser Ser Met Val Glu Arg Ile Leu Leu Gln His Glu Ala Thr	
221 226 231 236	
cca agc tct ctt tac caa ctt tgc cga ctc tgt atc cga agc tac ata	890
Pro Ser Ser Leu Tyr Gln Leu Cys Arg Leu Cys Ile Arg Ser Tyr Ile	
237 242 247 252	
gga aaa cca aga ttg cac ctt atc cca caa ctc cag ctg cca acg tta	938
Gly Lys Pro Arg Leu His Leu Ile Pro Gln Leu Gln Leu Pro Thr Leu	
253 258 263 268	
ctg aag aat ttc tta cag tat cga taa aacag taaagtaatt ctaaatacct	990
Leu Lys Asn Phe Leu Gln Tyr Arg *	
269 274	
tgaaaatcaa aattttctatt tcttttgctt aaggaatagt tcatataaaa atatgctaaa	1050
gataggataa aagtgagtgt gagatcaccc aggggaagcag taaaatatca atttttcattt	1110
taagtgtatt agtactattg ttttatcatt tatgctgtct ttggatacga aatcgtcgac	1170
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Arg Val Arg Ser Leu Asp Leu Asp Asp Trp Pro Pro Glu Leu Leu Ala	
166 171 176 181	
gtc atg act gcc atg ggc aat gcc ctc gcc aac agc gtc tgg gag ggg	1110
Val Met Thr Ala Met Gly Asn Ala Leu Ala Asn Ser Val Trp Glu Gly	
182 187 192 197	
gcc ttg ggt ggc tac tcc aag cca ggg cct gat gcc tgc aga gag gag	1158
Ala Leu Gly Gly Tyr Ser Lys Pro Gly Pro Asp Ala Cys Arg Glu Glu	
198 203 208 213	
aag gaa cgc tgg ata cgg gcc aag tat gaa cag aag ctc ttc ctg gcc	1206
Lys Glu Arg Trp Ile Arg Ala Lys Tyr Glu Gln Lys Leu Phe Leu Ala	
214 219 224 229	
cca ctg cca agc tca gat gtg cca ctg ggg cag cag ctg ctc cgg gcc	1254
Pro Leu Pro Ser Ser Asp Val Pro Leu Gly Gln Gln Leu Leu Arg Ala	
230 235 240 245	
gtg gtg gaa gat gac ctg cgg ctg ttg gtg atg ctc ctg gca cat ggc	1302
Val Val Glu Asp Asp Leu Arg Leu Leu Val Met Leu Leu Ala His Gly	
246 251 256 261	
tcc aaa gag gag gtg aat gag acc tat ggg gac ggg gac ggg cgg acg	1350
Ser Lys Glu Glu Val Asn Glu Thr Tyr Gly Asp Gly Asp Gly Arg Thr	
262 267 272 277	
gct cta cat ctc tcc agt gcc atg gcc aac gtt gtc ttc acg cag ctg	1398
Ala Leu His Leu Ser Ser Ala Met Ala Asn Val Val Phe Thr Gln Leu	
278 283 288 293	
ctc atc tgg tac ggg gtg gac gtg agg agc cgg gac gcc cgg ggc ctg	1446
Leu Ile Trp Tyr Gly Val Asp Val Arg Ser Arg Asp Ala Arg Gly Leu	
294 299 304 309	
act cca ctg gca tat gct cgc cgg gcc ggc agc cag gag tgt gca gac	1494
Thr Pro Leu Ala Tyr Ala Arg Arg Ala Gly Ser Gln Glu Cys Ala Asp	
310 315 320 325	
atc ttg atc cag cat ggc tgc cct ggg gag ggc tgt ggc tta gcg cct	1542
Ile Leu Ile Gln His Gly Cys Pro Gly Glu Gly Cys Gly Leu Ala Pro	
326 331 336 341	
acc ccc aac aga gag cct gcc aat ggc acc aac ccc tct gct gag ctg	1590
Thr Pro Asn Arg Glu Pro Ala Asn Gly Thr Asn Pro Ser Ala Glu Leu	
342 347 352 357	
cac cgt agt cct agc ctc cta taa ggcccaggaa gagggcagag gggccagaag	1644
His Arg Ser Pro Ser Leu Leu *	
358 363	
gactccatgg cccaaagacc ctccctccctg caggcactgt gggaacagac acagagatgg	1704
agaagcaggg acatgctgag aggacgaagc caaggaaatt agggaggaga gtcaaagggg	1764
tcaaggagag ttggggattt gagctgcagc agagagggat gagggattta gccctctgcc	1824

ctaaggtgcc attgaaaagg gacaggaccc ttcggagggtg cctgtgagga gaggggagca 1884  
ggacctctcc ctccctccaga tccctgcctc ctagtgccag cccctcacac gccttcatcc 1944  
tgaaacagga agaggacggc accaagttgg ggggtgctgga tgaaagagac gaggggtgat 2004  
ctgtgagtcc catgtaaact ttgtacattg gaatatttat gtttgtgtac atatttgatg 2064  
tgtgtgtgta tgatgagcca ataaaccaga ctgtgtgcgt gaaaaaaaaa aaaaa 2119

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<211> 1364  
<212> DNA  
<213> Homo sapiens

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<222> (48)..(1364)

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Met Arg Ala  
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gct gtg aca cgg gag cag cgg agg cac ctc ctg gag acc ttt ttc agg 104  
Ala Val Thr Arg Glu Gln Arg Arg His Leu Leu Glu Thr Phe Phe Arg  
4 9 14 19

cac ctt ttc tcc cag gtg ctg gac atc aac cag gcc gac gca ggg acc 152  
His Leu Phe Ser Gln Val Leu Asp Ile Asn Gln Ala Asp Ala Gly Thr  
20 25 30 35

ctg ccc ctg gac tcc tcc cag aag gtg cgg gag gcc ctg acc tgt gag 200  
Leu Pro Leu Asp Ser Ser Gln Lys Val Arg Glu Ala Leu Thr Cys Glu  
36 41 46 51

ctg agc agg gcc gag ttt gcc gag tcc ctg ggc ctc aag ccc cag gac 248  
Leu Ser Arg Ala Glu Phe Ala Glu Ser Leu Gly Leu Lys Pro Gln Asp  
52 57 62 67

atg ttt gtg gag tcc atg ttc tct ctg gct gac aag gat ggc aat ggc 296  
Met Phe Val Glu Ser Met Phe Ser Leu Ala Asp Lys Asp Gly Asn Gly  
68 73 78 83

tac ctg tcc ttc cga gag ttc ctg gac atc ctg gtg gtc ttc atg aaa 344  
Tyr Leu Ser Phe Arg Glu Phe Leu Asp Ile Leu Val Val Phe Met Lys  
84 89 94 99

ggc tct cct gag gaa aag tct cgc ctt atg ttc cgc atg tac gac ttt 392  
Gly Ser Pro Glu Glu Lys Ser Arg Leu Met Phe Arg Met Tyr Asp Phe  
100 105 110 115

gat ggg aat ggc ctc att tcc aag gat gag ttc atc agg atg ctg aga 440  
Asp Gly Asn Gly Leu Ile Ser Lys Asp Glu Phe Ile Arg Met Leu Arg



116	121	126	131	
tcc ttc atc gag atc	tcc aac aac tgc ctg	tcc aag gcc cag ctg	gct	488
Ser Phe Ile Glu Ile	Ser Asn Asn Cys Leu	Ser Lys Ala Gln Leu	Ala	
132	137	142	147	
gag gtg gtg gag tcc atg	ttc cgg gag tgc	gga ttc cag gac aag	gag	536
Glu Val Val Glu Ser	Met Phe Arg Glu Ser	Gly Phe Gln Asp Lys	Glu	
148	153	158	163	
gaa ctg aca tgg gaa gat	ttt cac ttc atg	ctg cgg gac cac aat	agc	584
Glu Leu Thr Trp Glu	Asp Phe His Phe Met	Leu Arg Asp His Asn	Ser	
164	169	174	179	
gag ctc cgc ttc acg cag	ctc tgt gtc aaa	ggg gtg gag gtg cct	gaa	632
Glu Leu Arg Phe Thr	Gln Leu Cys Val Lys	Gly Val Glu Val Pro	Glu	
180	185	190	195	
gtc atc aag gac ctc tgc	cgg cga gcc tcc	tac atc agc cag gat	atg	680
Val Ile Lys Asp Leu	Cys Arg Arg Ala Ser	Tyr Ile Ser Gln Asp	Met	
196	201	206	211	
atc tgt ccc tct ccc aga	gtg agt gcc cgc	tgt tcc cgc agc gac	att	728
Ile Cys Pro Ser Pro	Arg Val Ser Ala Arg	Cys Ser Arg Ser Asp	Ile	
212	217	222	227	
gag act gag ttg aca cct	cag aga ctg cag	tgc ccc atg gac aca	gac	776
Glu Thr Glu Leu Thr	Pro Gln Arg Leu Gln	Cys Pro Met Asp Thr	Asp	
228	233	238	243	
cct ccc cag gag att cgg	cgg agg ttt ggc	aag aag gta acg tca	ttc	824
Pro Pro Gln Glu Ile	Arg Arg Arg Phe Gly	Lys Lys Val Thr Ser	Phe	
244	249	254	259	
cag ccc ttg ctg ttc act	gag gcg cac cga	gag aag ttc caa cgc	agc	872
Gln Pro Leu Leu Phe	Thr Glu Ala His Arg	Glu Lys Phe Gln Arg	Ser	
260	265	270	275	
tgt ctc cac cag acg gtg	caa cag ttc aag	cgc ttc att gag aac	tac	920
Cys Leu His Gln Thr	Val Gln Gln Phe Lys	Arg Phe Ile Glu Asn	Tyr	
276	281	286	291	
cgg cgc cac atc ggc tgc	gtg gcc gtg ttc	tac gcc atc gct ggg	ggg	968
Arg Arg His Ile Gly	Cys Val Ala Val Phe	Tyr Ala Ile Ala Gly	Gly	
292	297	302	307	
ctt ttc ctg gag agg gcc	tac tac tac gcc	ttt gcc gca cat cac	acg	1016
Leu Phe Leu Glu Arg	Ala Tyr Tyr Tyr Ala	Phe Ala Ala His His	Thr	
308	313	318	323	
ggc atc aca gac acc acc	cgc gtg gga atc	atc ctg tgc cgg ggc	aca	1064
Gly Ile Thr Asp Thr	Thr Arg Val Gly Ile	Ile Leu Ser Arg Gly	Thr	
324	329	334	339	
gca gcc agc atc tct ttc	atg ttc tcc tac	atc ttg ctc acc atg	tgc	1112
Ala Ala Ser Ile Ser	Phe Met Phe Ser Tyr	Ile Leu Leu Thr Met	Cys	
340	345	350	355	

cgc aac ctc atc acc ttc ctg cga gaa acc ttc ctc aac cgc tac gtg	1160
Arg Asn Leu Ile Thr Phe Leu Arg Glu Thr Phe Leu Asn Arg Tyr Val	
356 361 366 371	
ccc ttc gac gcc gcc gtg gac ttc cat cgc ctc att gcc tcc acc gcc	1208
Pro Phe Asp Ala Ala Val Asp Phe His Arg Leu Ile Ala Ser Thr Ala	
372 377 382 387	
atc gtc ctc aca ggc agg gcc tgg gtg tcc ctg gga ggc tct cca ggg	1256
Ile Val Leu Thr Gly Arg Ala Trp Val Ser Leu Gly Gly Ser Pro Gly	
388 393 398 403	
cct ccc gcc ccc gct gac ttc ccc tcg tat gag agc ccc cct ctc tgc	1304
Pro Pro Ala Pro Ala Asp Phe Pro Ser Tyr Glu Ser Pro Pro Leu Cys	
404 409 414 419	
tgg cac tta cct tta atg tcc ttc tcc atc agg atg gag ttg gcc tgg	1352
Trp His Leu Pro Leu Met Ser Phe Ser Ile Arg Met Glu Leu Ala Trp	
420 425 430 435	
gcc agg gtg tga	1364
Ala Arg Val *	
436	

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Met Ala Gly Ser Pro Leu Leu Trp Gly Pro Arg Ala	
1 5 10	
ggg ggc gtc ggc ctt ttg gtg ctg ctg ctg ctc ggc ctg ttt cgg ccg	156
Gly Gly Val Gly Leu Leu Val Leu Leu Leu Leu Gly Leu Phe Arg Pro	
13 18 23 28	
ccc ccc gcg ctc tgc gcg cgg ccg gta aag gag ccc cgc ggc cta agc	204
Pro Pro Ala Leu Cys Ala Arg Pro Val Lys Glu Pro Arg Gly Leu Ser	
29 34 39 44	
gca gcg tct ccg ccc ttg gct gag act ggc gct cct cgc cgc ttc cgg	252
Ala Ala Ser Pro Pro Leu Ala Glu Thr Gly Ala Pro Arg Arg Phe Arg	
45 50 55 60	

cgg tca gtg ccc cga ggt gag gcg gcg ggg gcg gtg cag gag ctg gcg Arg Ser Val Pro Arg Gly Glu Ala Ala Gly Ala Val Gln Glu Leu Ala 61 66 71 76	300
cgg gcg ctg gcg cat ctg ctg gag gcc gaa cgt cag gag cgg gcg cgg Arg Ala Leu Ala His Leu Leu Glu Ala Glu Arg Gln Glu Arg Ala Arg 77 82 87 92	348
gcc gag gcg cag gag gct gag gat cag cag gcg cgc gtc ctg gcg cag Ala Glu Ala Gln Glu Ala Glu Asp Gln Gln Ala Arg Val Leu Ala Gln 93 98 103 108	396
ctg ctg cgc gtc tgg ggc gcc ccc cgc aac tct gat ccg gct ctg ggc Leu Leu Arg Val Trp Gly Ala Pro Arg Asn Ser Asp Pro Ala Leu Gly 109 114 119 124	444
ctg gac gac gac ccc gac gcg cct gca gcg cag ctc gct cgc gct ctg Leu Asp Asp Asp Pro Asp Ala Pro Ala Ala Gln Leu Ala Arg Ala Leu 125 130 135 140	492
ctc cgc gcc cgc ctt gac cct gcc gcc cta gca gcc cag ctt gtc ccc Leu Arg Ala Arg Leu Asp Pro Ala Ala Leu Ala Ala Gln Leu Val Pro 141 146 151 156	540
gcg ccc gtc ccc gcc gcg gcg ctc cga ccc cgg ccc ccg gtc tac gac Ala Pro Val Pro Ala Ala Ala Leu Arg Pro Arg Pro Pro Val Tyr Asp 157 162 167 172	588
gac ggc ccc gcg ggc ccg gat gct gag gag gca ggc gac gag aca ccc Asp Gly Pro Ala Gly Pro Asp Ala Glu Glu Ala Gly Asp Glu Thr Pro 173 178 183 188	636
gac gtg gac ccc gag ctg ttg agg tac ttg ctg gga cgg att ctt gcg Asp Val Asp Pro Glu Leu Leu Arg Tyr Leu Leu Gly Arg Ile Leu Ala 189 194 199 204	684
gga agc gcg gac tcc gag ggg gtg gca gcc ccg cgc cgc ctc cgc cgt Gly Ser Ala Asp Ser Glu Gly Val Ala Ala Pro Arg Arg Leu Arg Arg 205 210 215 220	732
gcc gcc gac cac gat gtg ggc tct gag ctg ccc cct gag ggc gtg ctg Ala Ala Asp His Asp Val Gly Ser Glu Leu Pro Pro Glu Gly Val Leu 221 226 231 236	780
ggg gcg ctg ctg cgt gtg aaa cgc cta gag acc ccg gcg ccc cag gtg Gly Ala Leu Leu Arg Val Lys Arg Leu Glu Thr Pro Ala Pro Gln Val 237 242 247 252	828
cct gca cgc cgc ctc ttg cca ccc tga gcaact gcccgatcc cgtgcaccct Pro Ala Arg Arg Leu Leu Pro Pro * 253 258	880
gggacccaga agtgcccccg ccattcccgcc accaggactg ctccccgcca gcacgtccag	940
agcaacttac cccggccagc cagccctctc acccgaggat ccctaccccc tggccccaca	1000
ataaacatga tctgaagcaa aaaaaaaaaa	1030

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Ala Pro Val Pro Ala Ala Ala Leu Arg Pro Arg Pro Pro Val Tyr Asp	
157 162 167 172	
gac ggc ccc gcg ggc ccg gat gct gag gag gca ggc gac gag aca ccc	636
Asp Gly Pro Ala Gly Pro Asp Ala Glu Glu Ala Gly Asp Glu Thr Pro	
173 178 183 188	
gac gtg gac ccc gag ctg ttg agg tac ttg ctg ggg gcg ctg ctg cgt	684
Asp Val Asp Pro Glu Leu Leu Arg Tyr Leu Leu Gly Ala Leu Leu Arg	
189 194 199 204	
gtg aaa cgc cta gag acc ccg gcg ccc cag gtg cct gca cgc cgc ctc	732
Val Lys Arg Leu Glu Thr Pro Ala Pro Gln Val Pro Ala Arg Arg Leu	
205 210 215 220	
ttg cca ccc tga gca ctgccccgat cccgtgcacc ctgggaccca gaagtgcccc	787
Leu Pro Pro *	
221	
cgccatcccg ccaccaggac tgctccccgc cagcacgtcc agagcaactt accccggcca	847
gccagccctc tcacccgagg atccctaccc cctggcccca caataaacat gatctgaagc	907
aaaaaaaaaa aa	919

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<213> Homo sapiens
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cagctggagg agcagctgga ggcacgagag gccagcgtgc gcaggctcgc agagcacgtg	180
cagagcctct gtgacgagcg ggacctcttc agacagcggc tccaggagct gacagagcgc	240
gtggccacgt cgcacgagga tgtggctgag ctccgggaaa agctgaggag aagagaggct	300
gacaaccaga gcctggagca ctccctaccag agggctctcca gccagctgca gaggc	357
	Met
	1
cac act ctg ctg aga gag aag gag gaa gag ctg gag cgc att aag gaa	405
His Thr Leu Leu Arg Glu Lys Glu Glu Glu Leu Glu Arg Ile Lys Glu	
2 7 12 17	
gca cat gag aag gtt ctg gag aag aag gag cag gac ctc aat gag gct	453

Ala His Glu Lys Val Leu Glu Lys Lys Glu Gln Asp Leu Asn Glu Ala	
18 23 28 33	
ttg gtt aaa atg gtt gcc ttg ggg agc agc tta gag gaa aca gaa att	501
Leu Val Lys Met Val Ala Leu Gly Ser Ser Leu Glu Glu Thr Glu Ile	
34 39 44 49	
aag ctc cag gca aaa gaa gag att tta agg aaa ttt gca agt gaa tct	549
Lys Leu Gln Ala Lys Glu Glu Ile Leu Arg Lys Phe Ala Ser Glu Ser	
50 55 60 65	
cca aag gac atg gaa gag cca cgg agt acc tct gaa gag aca caa agg	597
Pro Lys Asp Met Glu Glu Pro Arg Ser Thr Ser Glu Glu Thr Gln Arg	
66 71 76 81	
gat ggc tct ttg ctc cca ggt caa cca gtc caa gcc tct agg gca cct	645
Asp Gly Ser Leu Leu Pro Gly Gln Pro Val Gln Ala Ser Arg Ala Pro	
82 87 92 97	
gta ggc ctc cca cac tca agg ctc gag gat gag gac gag gac ctg ggg	693
Val Gly Leu Pro His Ser Arg Leu Glu Asp Glu Asp Glu Asp Leu Gly	
98 103 108 113	
gct cct ccg ggg gaa gag tac ggt gat ggc agc ccc agt agg gaa gac	741
Ala Pro Pro Gly Glu Glu Tyr Gly Asp Gly Ser Pro Ser Arg Glu Asp	
114 119 124 129	
agc atg gtg ccc cca aag tca gtg gaa gtg ctt gac agg gag ggc cat	789
Ser Met Val Pro Pro Lys Ser Val Glu Val Leu Asp Arg Glu Gly His	
130 135 140 145	
cag cag ggc aca gcc aaa ctc gac caa ggg gca cct ggt gtt aaa agg	837
Gln Gln Gly Thr Ala Lys Leu Asp Gln Gly Ala Pro Gly Val Lys Arg	
146 151 156 161	
caa aga atc cgg ttc tcc aca atc cag tgc caa aga tac att cac ccc	885
Gln Arg Ile Arg Phe Ser Thr Ile Gln Cys Gln Arg Tyr Ile His Pro	
162 167 172 177	
gaa ggg tct gag aag acc tgg acc agc agc aca tct tcc gac acc agc	933
Glu Gly Ser Glu Lys Thr Trp Thr Ser Ser Thr Ser Ser Asp Thr Ser	
178 183 188 193	
cag gac cgg tca ccc tcg gaa gaa agc atg tcc tca gag cct gca ccc	981
Gln Asp Arg Ser Pro Ser Glu Glu Ser Met Ser Ser Glu Pro Ala Pro	
194 199 204 209	
agt gta ctg cct gca act ggc gac tct gac acg tac ctc tcc atc atc	1029
Ser Val Leu Pro Ala Thr Gly Asp Ser Asp Thr Tyr Leu Ser Ile Ile	
210 215 220 225	
cac tcc ctg gag acc aag ctc tac gtc aca gag gaa aag ctc aaa gac	1077
His Ser Leu Glu Thr Lys Leu Tyr Val Thr Glu Glu Lys Leu Lys Asp	
226 231 236 241	
gtg acc gtg agg ctg gag agc cag cag ggt cag agc cgt gag gca ctg	1125
Val Thr Val Arg Leu Glu Ser Gln Gln Gly Gln Ser Arg Glu Ala Leu	

242	247	252	257	
ctc gca ctg cac cac cag tgg gcg ggc acc gag gcc cag ctg cgt gag				1173
Leu Ala Leu His His Gln Trp Ala Gly Thr Glu Ala Gln Leu Arg Glu				
258	263	268	273	
cag ctc cgc gcc agc ctg ctc cag gtt ggc gca ctg gcc tcc cag ctg				1221
Gln Leu Arg Ala Ser Leu Leu Gln Val Gly Ala Leu Ala Ser Gln Leu				
274	279	284	289	
gag cag gag agg cag gag agg gcc agg agg gtt gaa ggg cat gtt gga				1269
Glu Gln Glu Arg Gln Glu Arg Ala Arg Arg Val Glu Gly His Val Gly				
290	295	300	305	
gag ctt ggg gac ttc cag gtc aag aat agt cag gcc ctg atg tgc ctg				1317
Glu Leu Gly Asp Phe Gln Val Lys Asn Ser Gln Ala Leu Met Cys Leu				
306	311	316	321	
gaa aat tgc cga gaa caa ctg aga tct ctg cct agg gcc agc cag gag				1365
Glu Asn Cys Arg Glu Gln Leu Arg Ser Leu Pro Arg Ala Ser Gln Glu				
322	327	332	337	
gat gag cag gac gca cgc gca gcc tcc ctg gcc agt gtg gag agt gca				1413
Asp Glu Gln Asp Ala Arg Ala Ala Ser Leu Ala Ser Val Glu Ser Ala				
338	343	348	353	
ctc gtc agc gcc atc caa gcc ctg cag cac tgg ccg gcc cca gcc cat				1461
Leu Val Ser Ala Ile Gln Ala Leu Gln His Trp Pro Ala Pro Ala His				
354	359	364	369	
ggc ggg gcc cgt gca cag ctg gag aca ggt ggc acc gag gag aat ggg				1509
Gly Gly Ala Arg Ala Gln Leu Glu Thr Gly Gly Thr Glu Glu Asn Gly				
370	375	380	385	
aag cct gcc tcc ctg cag cag tgc tcc cag tct gag ttg aca gag cag				1557
Lys Pro Ala Ser Leu Gln Gln Cys Ser Gln Ser Glu Leu Thr Glu Gln				
386	391	396	401	
gag cag gtg agg ctt ctt tct gac cag att gct ctg gag gcc tcg ctg				1605
Glu Gln Val Arg Leu Leu Ser Asp Gln Ile Ala Leu Glu Ala Ser Leu				
402	407	412	417	
atc agc cag ata gca gat tcc ctg aag aac aca aca tca gat gtc tcc				1653
Ile Ser Gln Ile Ala Asp Ser Leu Lys Asn Thr Thr Ser Asp Val Ser				
418	423	428	433	
cga atg ctc cat gag att tct tgg tca gga cag cca ccg atg gaa tct				1701
Arg Met Leu His Glu Ile Ser Trp Ser Gly Gln Pro Pro Met Glu Ser				
434	439	444	449	
gct ggg gcc ccc gta gac acc tgg gcc agg aag gtc cta gtg gat ggt				1749
Ala Gly Ala Pro Val Asp Thr Trp Ala Arg Lys Val Leu Val Asp Gly				
450	455	460	465	
gag ttc tgg agc cag gtt gag tct ctg agg aag cac ttg ggg aca ctg				1797
Glu Phe Trp Ser Gln Val Glu Ser Leu Arg Lys His Leu Gly Thr Leu				
466	471	476	481	

gga gga gag gca gtc ggt gcc tca gga gac ggg cag caa agc atc cca	1845
Gly Gly Glu Ala Val Gly Ala Ser Gly Asp Gly Gln Gln Ser Ile Pro	
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Ser Leu Glu Gln Val	Pro Lys Glu Ile Phe	Thr Phe Glu Lys Thr Leu		
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Glu Glu Leu Tyr Leu	Asp Ala Asn Gln Ile	Glu Glu Leu Pro Lys Gln		
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Leu Phe Asn Cys Gln	Ser Leu His Lys Leu	Ser Leu Pro Asp Asn Asp		
65	70	75	80	
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Leu Thr Thr Leu Pro	Ala Ser Ile Ala Asn	Leu Ile Asn Leu Arg Glu		
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Leu Asp Val Ser Lys	Asn Gly Ile Gln Glu	Phe Pro Glu Asn Ile Lys		
97	102	107	112	
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Asn Cys Lys Val Leu	Thr Ile Val Glu Ala	Ser Val Asn Pro Ile Ser		
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Lys Leu Pro Asp Gly	Phe Ser Gln Leu Leu	Asn Leu Thr Gln Leu Tyr		
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Ser Asn Glu Phe Thr	Glu Val Pro Glu Val	Leu Glu Gln Leu Ser Gly		
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Asn Ile Glu Met Val	Glu Glu Gly Ile Ser	Thr Cys Glu Asn Leu Gln		
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Asp Cys Ser Phe Asn Glu Val Glu Ala Leu Pro Ser Ser Ile Gly Gln	
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Leu Pro Pro Glu Ile Gly Ser Trp Lys Asn Ile Thr Val Leu Phe Leu	
337 342 347 352	
cat tcc aat aaa ctt gag aca ctt cca gag gaa atg ggt gat atg caa	1344
His Ser Asn Lys Leu Glu Thr Leu Pro Glu Glu Met Gly Asp Met Gln	
353 358 363 368	
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Lys Leu Lys Val Ile Asn Leu Ser Asp Asn Arg Leu Lys Asn Leu Pro	
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Phe Ser Phe Thr Lys Leu Gln Gln Leu Thr Ala Met Trp Leu Ser Asp	
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Asn Gln Ser Lys Pro Leu Ile Pro Leu Gln Lys Glu Thr Asp Ser Glu	
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Thr Gln Lys Met Val Leu Thr Asn Tyr Met Phe Pro Gln Gln Pro Arg	
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 cgcccggatt ctttggaac ccactggtgc tgggcagctc ctgccagcca tgcgactgca 180  
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 Met Gly Pro Gln Cys Arg Glu Cys Ala Pro Gly Tyr Trp Gly  
 1 5 10  
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Asp	Pro	His	Thr	Gly	Arg	Cys	Asn	Cys	Pro	Pro	Gly	Leu	Ser	Gly	Glu		
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Arg	Cys	Asp	Thr	Cys	Ser	Gln	Gln	His	Gln	Val	Pro	Val	Pro	Gly	Gly		
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Pro	Val	Gly	His	Ser	Ile	His	Cys	Glu	Val	Cys	Asp	His	Cys	Val	Val		
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cac	gag	caa	ctg	cgt	ggc	atc	aat	gcc	agc	tcc	atg	gcc	tgg	gcc	cgt	878	
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Leu	His	Arg	Leu	Asn	Ala	Ser	Ile	Ala	Asp	Leu	Gln	Ser	Gln	Leu	Arg		
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Ser	Pro	Leu	Gly	Pro	Arg	His	Glu	Thr	Ala	Gln	Gln	Leu	Glu	Val	Leu		
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Gln	Ala	Val	Gly	Thr	Arg	Asp	Gln	Ala	Ser	Gln	Leu	Leu	Ala	Gly	Thr		
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Val	Asp	Arg	Thr	Leu	Ser	Glu	Leu	Met	Ser	Gln	Thr	Gly	His	Leu	Gly		
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ctg	gcc	aat	gcc	tcg	gct	cca	tca	ggt	gag	cag	ctg	ctc	cgg	aca	ctg	1214	
Leu	Ala	Asn	Ala	Ser	Ala	Pro	Ser	Gly	Glu	Gln	Leu	Leu	Arg	Thr	Leu		
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gcc	gag	gtg	gag	cgg	ctg	ctc	tgg	gag	atg	cgg	gcc	cgg	gac	ctg	ggg	1262	
Ala	Glu	Val	Glu	Arg	Leu	Leu	Trp	Glu	Met	Arg	Ala	Arg	Asp	Leu	Gly		
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Ala	Pro	Gln	Ala	Ala	Ala	Glu	Ala	Glu	Leu	Ala	Ala	Ala	Gln	Arg	Leu		

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ctg gcc cgg gtg cag gag cag ctg agc agc ctc tgg gag gag aac cag				1358
Leu Ala Arg Val Gln Glu Gln Leu Ser Ser Leu Trp Glu Glu Asn Gln				
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Ala Leu Ala Thr Gln Thr Arg Asp Arg Leu Ala Gln His Glu Ala Gly				
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ctc atg gac ctg cga gag gct ttg aac cgg gca gtg gac gcc aca cgg				1454
Leu Met Asp Leu Arg Glu Ala Leu Asn Arg Ala Val Asp Ala Thr Arg				
287	292	297	302	
gag gcc cag gag ctc aac agc cgc aac cag gag cgc ctg gag gaa gcc				1502
Glu Ala Gln Glu Leu Asn Ser Arg Asn Gln Glu Arg Leu Glu Glu Ala				
303	308	313	318	
ctg caa agg aag cag gag ctg tcc cgg gac aat gcc acc ctg cag gcc				1550
Leu Gln Arg Lys Gln Glu Leu Ser Arg Asp Asn Ala Thr Leu Gln Ala				
319	324	329	334	
act ctg cat gcg gct agg gac acc ctg gcc agc gtc ttc aga ttg ctg				1598
Thr Leu His Ala Ala Arg Asp Thr Leu Ala Ser Val Phe Arg Leu Leu				
335	340	345	350	
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His Ser Leu Asp Gln Ala Lys Glu Glu Leu Glu Arg Leu Ala Ala Ser				
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ctg gac ggg gct cgg acc cca ctg ctg cag agg atg cag acc ttc tcc				1694
Leu Asp Gly Ala Arg Thr Pro Leu Leu Gln Arg Met Gln Thr Phe Ser				
367	372	377	382	
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Pro Ala Gly Ser Lys Leu Arg Leu Val Glu Ala Ala Glu Ala His Ala				
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Gln Gln Leu Gly Gln Leu Ala Leu Asn Leu Ser Ser Ile Ile Leu Asp				
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Val Asn Gln Asp Arg Leu Thr Gln Arg Ala Ile Glu Ala Ser Asn Ala				
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Tyr Ser Arg Ile Leu Gln Ala Val Gln Ala Ala Glu Asp Ala Ala Gly				
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Gln Ala Leu Gln Gln Ala Asp His Thr Trp Ala Thr Val Val Arg Gln				
447	452	457	462	
ggc ctg gtg gac cga gcc cag cag ctc ctg gcc aac agc act gca cta				1982
Gly Leu Val Asp Arg Ala Gln Gln Leu Leu Ala Asn Ser Thr Ala Leu				
463	468	473	478	

gaa gag gcc atg ctc cag gaa cag cag agg ctg ggc ctt gtg tgg gct	2030
Glu Glu Ala Met Leu Gln Glu Gln Arg Leu Gly Leu Val Trp Ala	
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Ala Leu Gln Gly Ala Arg Thr Gln Leu Arg Asp Val Arg Ala Lys Lys	
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Asp Gln Leu Glu Ala His Ile Gln Ala Ala Gln Ala Met Leu Ala Met	
511 516 521 526	
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Asp Thr Asp Glu Thr Ser Lys Lys Ile Ala His Ala Lys Ala Val Ala	
527 532 537 542	
gct gaa gcc cag gac acc gcc acc cgt gtg cag tcc cag ctg cag gcc	2222
Ala Glu Ala Gln Asp Thr Ala Thr Arg Val Gln Ser Gln Leu Gln Ala	
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Gly Gln Asp Leu Gly Gln Ala Val Leu Asp Ala Gly His Ser Val Ser	
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Thr Leu Glu Lys Thr Leu Pro Gln Leu Leu Ala Lys Leu Ser Ile Leu	
591 596 601 606	
gag aac cgt ggg gtg cac aac gcc agc ctg gcc ctg tcc gcc agc att	2414
Glu Asn Arg Gly Val His Asn Ala Ser Leu Ala Leu Ser Ala Ser Ile	
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Gly Arg Val Arg Glu Leu Ile Ala Gln Ala Arg Gly Ala Ala Ser Lys	
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Val Lys Val Pro Met Lys Phe Asn Gly Arg Ser Gly Val Gln Leu Arg	
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acc cca cgg gat ctt gcc gac ctt gct gcc tac act gcc ctc aag ttc	2558
Thr Pro Arg Asp Leu Ala Asp Leu Ala Ala Tyr Thr Ala Leu Lys Phe	
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Phe Val Met Tyr Met Gly Ser Arg Gln Ala Thr Gly Asp Tyr Met Gly	
687 692 697 702	

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Val Ser Leu Arg Asp Lys Lys Val His Trp Val Tyr Gln Leu Gly Glu	
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Ala Gly Pro Ala Val Leu Ser Ile Asp Glu Asp Ile Gly Glu Gln Phe	
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Ala Ala Val Ser Leu Asp Arg Thr Leu Gln Phe Gly His Met Ser Val	
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Thr Val Glu Arg Gln Met Ile Gln Glu Thr Lys Gly Asp Thr Val Ala	
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Pro Gly Ala Glu Gly Leu Leu Asn Leu Arg Pro Asp Asp Phe Val Phe	
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Tyr Val Gly Gly Tyr Pro Ser Thr Phe Thr Pro Pro Pro Leu Leu Arg	
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Phe Pro Gly Tyr Arg Gly Cys Ile Glu Met Asp Thr Leu Asn Glu Glu	
799 804 809 814	
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Val Val Ser Leu Tyr Asn Phe Glu Arg Thr Phe Gln Leu Asp Thr Ala	
815 820 825 830	
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Val Asp Arg Pro Cys Ala Arg Ser Lys Ser Thr Gly Asp Pro Trp Leu	
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Thr Asp Gly Ser Tyr Leu Asp Gly Thr Gly Phe Ala Arg Ile Ser Phe	
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Lys	Arg	Val	Leu	Val	Arg	Val	Glu	Arg	Ala	Thr	Val	Tyr	Ser	Val	Glu		
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959					964					969					974		
ccg	ccc	gac	cag	ctg	ccc	ccg	agc	ctg	cga	tgg	ctc	ttc	ccc	acc	gga	3518	
Pro	Pro	Asp	Gln	Leu	Pro	Pro	Ser	Leu	Arg	Trp	Leu	Phe	Pro	Thr	Gly		
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Val	Asp	Leu	Lys	Arg	Leu	Asn	Thr	Thr	Gly	Val	Ser	Ala	Gly	Cys	Thr		
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Ala	Asp	Gly	Ala	Pro	His	Tyr	Val	Ala	Phe	Tyr	Ser	Asn	Ala	Thr	Gly		
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Cys Ile Ser Asn Val Phe Val Gln Arg Leu Leu Gly Pro Gln Arg Val				
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Ala Pro Ala Leu Gln Ala Gln Thr Pro Gly Leu Gly Pro Arg Gly Leu				
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cag gcc acc gcc cgg aag gcc tcc cgc cgc agc cgt cag ccc gcc cgg				4238
Gln Ala Thr Ala Arg Lys Ala Ser Arg Arg Ser Arg Gln Pro Ala Arg				
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cat cct gcc tgc atg ctg ccc cca cac ctc agg acc acc cga gac tcc				4286
His Pro Ala Cys Met Leu Pro Pro His Leu Arg Thr Thr Arg Asp Ser				
1231	1236	1241	1246	
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Tyr Gln Phe Gly Gly Ser Leu Ser Ser His Leu Glu Phe Val Gly Ile				
1247	1252	1257	1262	
ctg gcc cga cat agg aac tgg ccc agt ctc tcc atg cac gtc ctc ccg				4382
Leu Ala Arg His Arg Asn Trp Pro Ser Leu Ser Met His Val Leu Pro				
1263	1268	1273	1278	
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Arg Ser Ser Arg Gly Leu Leu Leu Phe Thr Ala Arg Leu Arg Pro Gly				
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Ser Pro Ser Leu Ala Leu Phe Leu Ser Asn Gly His Phe Val Ala Gln				
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Met Glu Gly Leu Gly Thr Arg Leu Arg Ala Gln Ser Arg Gln Arg Ser				
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Arg Pro Gly Arg Trp His Lys Val Ser Val Arg Trp Glu Lys Asn Arg				
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atc ctg ctg gtg acg gac ggg gcc cgg gcc tgg agc cag gag ggg ccg				4622
Ile Leu Leu Val Thr Asp Gly Ala Arg Ala Trp Ser Gln Glu Gly Pro				
1343	1348	1353	1358	
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His Arg Gln His Gln Gly Ala Glu His Pro Gln Pro His Thr Leu Phe				
1359	1364	1369	1374	
gtg ggc ggc ctc ccg gcc agc agc cac agc tcc aaa ctt ccg gtg acc				4718
Val Gly Gly Leu Pro Ala Ser Ser His Ser Ser Lys Leu Pro Val Thr				
1375	1380	1385	1390	

gtc ggg ttc agc ggc tgt gtg aag aga ctg agg ctg cac ggg agg ccc	4766
Val Gly Phe Ser Gly Cys Val Lys Arg Leu Arg Leu His Gly Arg Pro	
1391 1396 1401 1406	
ctg ggg gcc ccc aca cgg atg gca ggg gtc aca ccc tgc atc ttg ggc	4814
Leu Gly Ala Pro Thr Arg Met Ala Gly Val Thr Pro Cys Ile Leu Gly	
1407 1412 1417 1422	
ccc ctg gag gcg ggc ctg ttc ttc cca ggc agc ggg gga gtt atc act	4862
Pro Leu Glu Ala Gly Leu Phe Phe Pro Gly Ser Gly Gly Val Ile Thr	
1423 1428 1433 1438	
tta gac ctc cca gga gct aca ctg cct gat gtg ggc ctg gaa ctg gag	4910
Leu Asp Leu Pro Gly Ala Thr Leu Pro Asp Val Gly Leu Glu Leu Glu	
1439 1444 1449 1454	
gtg cgg ccc ctg gca gtc acc gga ctg atc ttc cac ttg ggc cag gcc	4958
Val Arg Pro Leu Ala Val Thr Gly Leu Ile Phe His Leu Gly Gln Ala	
1455 1460 1465 1470	
cgg acg ccc ccc tac ttg cag ttg cag gtg acc gag aag caa gtc ctg	5006
Arg Thr Pro Pro Tyr Leu Gln Leu Gln Val Thr Glu Lys Gln Val Leu	
1471 1476 1481 1486	
ctg cgg gcg gat gac gga gca ggg gag ttc tcc acg tca gtg acc cgc	5054
Leu Arg Ala Asp Asp Gly Ala Gly Glu Phe Ser Thr Ser Val Thr Arg	
1487 1492 1497 1502	
ccc tca gtg ctg tgt gat ggc cag tgg cac cgg cta gcg gtg atg aaa	5102
Pro Ser Val Leu Cys Asp Gly Gln Trp His Arg Leu Ala Val Met Lys	
1503 1508 1513 1518	
agc ggg aat gtg ctc cgg ctg gag gtg gac gcg cag agc aac cac acc	5150
Ser Gly Asn Val Leu Arg Leu Glu Val Asp Ala Gln Ser Asn His Thr	
1519 1524 1529 1534	
gtg ggc ccc ttg ctg gcg gct gca gct ggt gcc cca gcc cct ctg tac	5198
Val Gly Pro Leu Leu Ala Ala Ala Ala Gly Ala Pro Ala Pro Leu Tyr	
1535 1540 1545 1550	
ctc ggg ggc ctg cct gag ccc atg gcc gtg cag ccc tgg ccc ccc gcc	5246
Leu Gly Gly Leu Pro Glu Pro Met Ala Val Gln Pro Trp Pro Pro Ala	
1551 1556 1561 1566	
tac tgc ggc tgc atg agg agg ctg gcg gtg aac cgg tcc ccc gtc gcc	5294
Tyr Cys Gly Cys Met Arg Arg Leu Ala Val Asn Arg Ser Pro Val Ala	
1567 1572 1577 1582	
atg act cgc tct gtg gag gtc cac ggg gca gtg ggg gcc agt ggc tgc	5342
Met Thr Arg Ser Val Glu Val His Gly Ala Val Gly Ala Ser Gly Cys	
1583 1588 1593 1598	
cca gcc gcc tag gac acagccaacc ccggcccctg gtcaggcccc tgcagctgcc	5397
Pro Ala Ala *	
1599	



tcacaccgcc ccttgtgctc gcctcatagg tgtctatttg gactctaagc tctacgggtg 5457  
acagatcttg tttctgaaga tgggttaagt tatagcttct taaacgaaag aataaaatac 5517  
tgcaaaatgt ttttatattt ggcccttcca cccattttta attgtgagag atttgtcacc 5577  
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aaa 5640

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Gly Gly Ile Met Ala Gly Ser Ser Gly Ser Glu His Gly Gly Gly Ser  
2 7 12 17

tgc gga ggc tcg gac ctg ccc ctg cgt ttc ccc tac ggg cgg cca gag 153  
Cys Gly Gly Ser Asp Leu Pro Leu Arg Phe Pro Tyr Gly Arg Pro Glu  
18 23 28 33

ttc ctg ggg ctg tct cag gac gag gtg gag tgc agc gcc gac cac atc 201  
Phe Leu Gly Leu Ser Gln Asp Glu Val Glu Cys Ser Ala Asp His Ile  
34 39 44 49

gcc cgc ccc atc ctc atc ctc aag gag act cgg cgg ctg ccc tgg gcc 249  
Ala Arg Pro Ile Leu Ile Leu Lys Glu Thr Arg Arg Leu Pro Trp Ala  
50 55 60 65

act ggc tac gca gag gtt atc aat gcc ggg aag agc aca cac aat gaa 297  
Thr Gly Tyr Ala Glu Val Ile Asn Ala Gly Lys Ser Thr His Asn Glu  
66 71 76 81

gac caa gcc agc tgt gag gtg ctc act gtg aag aag aag gca ggg gcc 345  
Asp Gln Ala Ser Cys Glu Val Leu Thr Val Lys Lys Lys Ala Gly Ala  
82 87 92 97

gtg acc tca acc cca aac agg aac tca tcc aag aga cgg tcc tcc ctt 393  
Val Thr Ser Thr Pro Asn Arg Asn Ser Ser Lys Arg Arg Ser Ser Leu  
98 103 108 113

ccc aat ggg gaa ggg ctg cag ctg aag gag aac tcg gaa tcc gag ggt 441  
Pro Asn Gly Glu Gly Leu Gln Leu Lys Glu Asn Ser Glu Ser Glu Gly

114	119	124	129	
gtt tcc tgc cac tat tgg tgc ctg ttt gac ggg cac gcg ggg tcc ggg				489
Val Ser Cys His Tyr Trp Ser Leu Phe Asp Gly His Ala Gly Ser Gly				
130	135	140	145	
gcc gcg gtg gtg gcg tca cgc ctg ctg cag cac cac atc acg gag cag				537
Ala Ala Val Val Ala Ser Arg Leu Leu Gln His His Ile Thr Glu Gln				
146	151	156	161	
ctg cag gac atc gtg gac atc ctg aag aac tcc gcc gtc ctg ccc cct				585
Leu Gln Asp Ile Val Asp Ile Leu Lys Asn Ser Ala Val Leu Pro Pro				
162	167	172	177	
acc tgc ctg ggg gag gag cct gag aac acg ccc gcc aac agc cgg act				633
Thr Cys Leu Gly Glu Glu Pro Glu Asn Thr Pro Ala Asn Ser Arg Thr				
178	183	188	193	
ctg acc cgg gca gcc tcc ctg cgc gga ggg gtg ggg gcc ccg ggc tcc				681
Leu Thr Arg Ala Ala Ser Leu Arg Gly Gly Val Gly Ala Pro Gly Ser				
194	199	204	209	
ccc agc acg ccc ccc aca cgc ttc ttt acc gag aag aag att ccc cat				729
Pro Ser Thr Pro Pro Thr Arg Phe Phe Thr Glu Lys Lys Ile Pro His				
210	215	220	225	
gag tgc ctg gtc atc gga gcg ctt gaa agt gca ttc aag gaa atg gac				777
Glu Cys Leu Val Ile Gly Ala Leu Glu Ser Ala Phe Lys Glu Met Asp				
226	231	236	241	
cta cag ata gaa cga gag agg agt tca tat aat ata tct ggt ggc tgc				825
Leu Gln Ile Glu Arg Glu Arg Ser Ser Tyr Asn Ile Ser Gly Gly Cys				
242	247	252	257	
acg gcc ctc att gtg att tgc ctt ttg ggg aag ctg tat gtt gca aat				873
Thr Ala Leu Ile Val Ile Cys Leu Leu Gly Lys Leu Tyr Val Ala Asn				
258	263	268	273	
gct ggg gat agc agg gcc ata atc atc aga aat gga gaa att atc ccc				921
Ala Gly Asp Ser Arg Ala Ile Ile Ile Arg Asn Gly Glu Ile Ile Pro				
274	279	284	289	
atg tct tca gaa ttt acc ccc gag acg gag cgc cag cga ctt cag tac				969
Met Ser Ser Glu Phe Thr Pro Glu Thr Glu Arg Gln Arg Leu Gln Tyr				
290	295	300	305	
ctg gca ttc atg cag cct cac ttg ctg gga aat gag ttc aca cat ttg				1017
Leu Ala Phe Met Gln Pro His Leu Leu Gly Asn Glu Phe Thr His Leu				
306	311	316	321	
gag ttt cca agg aga gta cag aga aag gag ctt gga aag aag atg ctc				1065
Glu Phe Pro Arg Arg Val Gln Arg Lys Glu Leu Gly Lys Lys Met Leu				
322	327	332	337	
tac agg gac ttt aat atg aca ggc tgg gca tac aaa acc att gag gat				1113
Tyr Arg Asp Phe Asn Met Thr Gly Trp Ala Tyr Lys Thr Ile Glu Asp				
338	343	348	353	

gag gac ttg aag ttc ccc ctt ata tat gga gaa ggc aag aag gcc cgg	1161
Glu Asp Leu Lys Phe Pro Leu Ile Tyr Gly Glu Gly Lys Lys Ala Arg	
354 359 364 369	
gta atg gca act att gga gtg acc agg gga ctt ggg gac cat gac ctg	1209
Val Met Ala Thr Ile Gly Val Thr Arg Gly Leu Gly Asp His Asp Leu	
370 375 380 385	
aag gtg cat gac tcc aac atc tac att aaa cca ttc ctg tct tca gct	1257
Lys Val His Asp Ser Asn Ile Tyr Ile Lys Pro Phe Leu Ser Ser Ala	
386 391 396 401	
cca gag gta aga atc tac gat ctt tca aaa tat gat cat gga tca gat	1305
Pro Glu Val Arg Ile Tyr Asp Leu Ser Lys Tyr Asp His Gly Ser Asp	
402 407 412 417	
gat gtg ctg atc ttg gcc act gat gga ctc tgg gac gtt tta tca aat	1353
Asp Val Leu Ile Leu Ala Thr Asp Gly Leu Trp Asp Val Leu Ser Asn	
418 423 428 433	
gaa gaa gta gca gaa gca atc act cag ttt ctt cct aac tgt gat cca	1401
Glu Glu Val Ala Glu Ala Ile Thr Gln Phe Leu Pro Asn Cys Asp Pro	
434 439 444 449	
gat gat cct cac agg tac aca ctg gca gct cag gac ctg gtg atg cgt	1449
Asp Asp Pro His Arg Tyr Thr Leu Ala Ala Gln Asp Leu Val Met Arg	
450 455 460 465	
gcc cgg ggt gtg ctg aag gac aga gga tgg cgg ata tct aat gac cga	1497
Ala Arg Gly Val Leu Lys Asp Arg Gly Trp Arg Ile Ser Asn Asp Arg	
466 471 476 481	
ctg ggc tca gga gac gac att tct gta tat gtc att cct tta ata cat	1545
Leu Gly Ser Gly Asp Asp Ile Ser Val Tyr Val Ile Pro Leu Ile His	
482 487 492 497	
gga aac aag ctg tca tga aaatgg cccaggggat tgggaggaca gaggggaaga	1599
Gly Asn Lys Leu Ser *	
498 503	
aagctgggat gcctcttggc aggacggaac tgggaagtgc cccagctgag ttccaagtga	1659
tgcagtctct tcccagccca agcggggagt tcatggccaa aagactatgc ttcaagatga	1719
ccctttgggt tccatttctt ctttagtaac aggccaactc aacaagagca aaacacaaag	1779
gctgctacca agtggtgttg tatttcagtt cctttcatag gcctccgagg tggccattga	1839
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<213> Homo sapiens

<220>

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<222> (240)..(1097)

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gggttaacct	gggtcaaagt	cacggattct	cacctcgtag	agttacgctc	tcccgcggca	180
cgccccgag	gacttgaagt	cctgagcgct	caagtttgtc	cgtaggtcga	gagaaggcc	239
atg gag gtg ccg cca ccg gca ccg cgg agc ttt ctc tgt aga gca ttg	287					
Met Glu Val Pro Pro Pro Ala Pro Arg Ser Phe Leu Cys Arg Ala Leu						
1	5	10	15			
tgc cta ttt ccc cga gtc ttt gct gcc gaa gct gtg act gcc gat tcg	335					
Cys Leu Phe Pro Arg Val Phe Ala Ala Glu Ala Val Thr Ala Asp Ser						
17	22	27	32			
gaa gtc ctt gag gag cgt cag aag cgg ctt ccc tac gtc cca gag ccc	383					
Glu Val Leu Glu Glu Arg Gln Lys Arg Leu Pro Tyr Val Pro Glu Pro						
33	38	43	48			
tat tac ccg gaa tct gga tgg gac cgc ctc cgg gag ctg ttt ggc aaa	431					
Tyr Tyr Pro Glu Ser Gly Trp Asp Arg Leu Arg Glu Leu Phe Gly Lys						
49	54	59	64			
gat gaa cag cag aga att tca aag gac ctt gct gat atc tgt aag acg	479					
Asp Glu Gln Gln Arg Ile Ser Lys Asp Leu Ala Asp Ile Cys Lys Thr						
65	70	75	80			
gca gct aca gca ggc atc att ggc tgg gtg tat ggg gga ata cca gct	527					
Ala Ala Thr Ala Gly Ile Ile Gly Trp Val Tyr Gly Gly Ile Pro Ala						
81	86	91	96			
ttt att cat gct aaa caa caa tac att gag cag agc cag gca gaa att	575					
Phe Ile His Ala Lys Gln Gln Tyr Ile Glu Gln Ser Gln Ala Glu Ile						
97	102	107	112			
tat cat aac cgg ttt gat gct gtg caa tct gca cat cgt gct gcc aca	623					
Tyr His Asn Arg Phe Asp Ala Val Gln Ser Ala His Arg Ala Ala Thr						
113	118	123	128			
cga ggc ttc att cgt tat ggc tgg cgc tgg ggt tgg aga act gca gtg	671					
Arg Gly Phe Ile Arg Tyr Gly Trp Arg Trp Gly Trp Arg Thr Ala Val						
129	134	139	144			
ttt gtg act ata ttc aac aca gtg aac act agt ctg aat gta tac cga	719					
Phe Val Thr Ile Phe Asn Thr Val Asn Thr Ser Leu Asn Val Tyr Arg						
145	150	155	160			
aat aaa gat gcc tta agc cat ttt gta att gca gga gct gtc acg gga	767					
Asn Lys Asp Ala Leu Ser His Phe Val Ile Ala Gly Ala Val Thr Gly						
161	166	171	176			

agt ctt ttt agg ata aac gta ggc ctg cgt ggc ctg gtg get ggt ggc	815
Ser Leu Phe Arg Ile Asn Val Gly Leu Arg Gly Leu Val Ala Gly Gly	
177 182 187 192	
ata att gga gcc ttg ctg ggc act cct gta gga ggc ctg ctg atg gca	863
Ile Ile Gly Ala Leu Leu Gly Thr Pro Val Gly Gly Leu Leu Met Ala	
193 198 203 208	
ttt cag aag tac tct ggt gag act gtt cag gaa aaa aaa cag aag gat	911
Phe Gln Lys Tyr Ser Gly Glu Thr Val Gln Glu Lys Lys Gln Lys Asp	
209 214 219 224	
cga aag gca ctc cat gag cta aaa ctg gaa gag tgg aaa ggc aga cta	959
Arg Lys Ala Leu His Glu Leu Lys Leu Glu Glu Trp Lys Gly Arg Leu	
225 230 235 240	
caa gtt act gag cac ctc cct gag aaa att gaa agt agt tta cag gaa	1007
Gln Val Thr Glu His Leu Pro Glu Lys Ile Glu Ser Ser Leu Gln Glu	
241 246 251 256	
gat gaa cct gag aat gat gct aag aaa att gaa gca ctg cta aac ctt	1055
Asp Glu Pro Glu Asn Asp Ala Lys Lys Ile Glu Ala Leu Leu Asn Leu	
257 262 267 272	
cct aga aac cct tca gta ata gat aaa caa gac aag gac tga aagtgt	1104
Pro Arg Asn Pro Ser Val Ile Asp Lys Gln Asp Lys Asp *	
273 278 283	
ctgaacttga aactcactgg agagctgaag ggagctgcc a tgtccgatga atgccaacag	1164
acaggccact ctttggtcag cctgctgaca aatttaagtg ctggtacctg tgggtggcagt	1224
ggcttgctct tgtctttttt ttttcttttt aactaagaat ggggctgttg tactctcact	1284
ttacttatcc ttcaatttaa atacatactt atgtttgtat taatctatca atatatgcat	1344
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aaaaaaaaaa aa	1416

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 <222> (73)..(1752)

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Met Ala Gly Gly Ala Arg Glu Val Leu Thr Leu Gln  
 1 5 10

ttg gga cat ttt gcc ggt ttc gtg ggc gcg cac tgg tgg aac cag cag	156
Leu Gly His Phe Ala Gly Phe Val Gly Ala His Trp Trp Asn Gln Gln	
13 18 23 28	
gat gct gcg ctg ggc cga gcg acc gat tcc aag gag ccc ccg gga gag	204
Asp Ala Ala Leu Gly Arg Ala Thr Asp Ser Lys Glu Pro Pro Gly Glu	
29 34 39 44	
ctg tgc ccc gac gtc ctg tat cgt acg ggc cgg acg ctg cac ggc cag	252
Leu Cys Pro Asp Val Leu Tyr Arg Thr Gly Arg Thr Leu His Gly Gln	
45 50 55 60	
gag acc tac acg ccg cga ctc atc ctc atg gat ctg aag ggt agt ttg	300
Glu Thr Tyr Thr Pro Arg Leu Ile Leu Met Asp Leu Lys Gly Ser Leu	
61 66 71 76	
agc tcc cta aaa gag gaa ggt gga ctc tac agg gac aaa cag ttg gat	348
Ser Ser Leu Lys Glu Glu Gly Gly Leu Tyr Arg Asp Lys Gln Leu Asp	
77 82 87 92	
gat gca ata gca tgg cag ggg aag ctc acc aca cac aaa gag gaa ctc	396
Asp Ala Ile Ala Trp Gln Gly Lys Leu Thr Thr His Lys Glu Glu Leu	
93 98 103 108	
tat ccc aag aac cct tat ctc caa gac ttt ctg agt gca gag gga gtg	444
Tyr Pro Lys Asn Pro Tyr Leu Gln Asp Phe Leu Ser Ala Glu Gly Val	
109 114 119 124	
ctg agt agt gat ggt gtc tgg agg gtc aaa tcc att ccc aat ggc aaa	492
Leu Ser Ser Asp Gly Val Trp Arg Val Lys Ser Ile Pro Asn Gly Lys	
125 130 135 140	
ggg tcc tca cca ctc ccc acc gct aca act cca aaa cca ctt atc cct	540
Gly Ser Ser Pro Leu Pro Thr Ala Thr Thr Pro Lys Pro Leu Ile Pro	
141 146 151 156	
aca gag gcc agc atc agg gtc tgg tca gac ttc ctc aga gtc cat ctc	588
Thr Glu Ala Ser Ile Arg Val Trp Ser Asp Phe Leu Arg Val His Leu	
157 162 167 172	
cat ccc cgg agc atc tgt atg att cag aag tac aac cac gat ggg gaa	636
His Pro Arg Ser Ile Cys Met Ile Gln Lys Tyr Asn His Asp Gly Glu	
173 178 183 188	
gca ggt cgg ctg gag gct ttt ggc caa ggg gaa agt gtc cta aag gaa	684
Ala Gly Arg Leu Glu Ala Phe Gly Gln Gly Glu Ser Val Leu Lys Glu	
189 194 199 204	
ccc aag tac cag gaa gag ctg gag gac agg ctg cat ttc tac gtg gag	732
Pro Lys Tyr Gln Glu Glu Leu Glu Asp Arg Leu His Phe Tyr Val Glu	
205 210 215 220	
gaa tgt gac tac ttg cag ggc ttc cag atc ctg tgt gac ctg cac gat	780
Glu Cys Asp Tyr Leu Gln Gly Phe Gln Ile Leu Cys Asp Leu His Asp	

221	226	231	236	
ggc ttc tct ggg gta	ggc gcg aag gcg gca	gag ctg cta caa gat gaa	828	
Gly Phe Ser Gly Val	Gly Ala Lys Ala Ala	Glu Leu Leu Gln Asp Glu		
237	242	247	252	
tat tca ggg cgg gga	ata ata acc tgg ggc	ctg cta cct ggt ccc tac	876	
Tyr Ser Gly Arg Gly	Ile Ile Thr Trp Gly	Leu Leu Pro Gly Pro Tyr		
253	258	263	268	
cat cgt ggg gag gcc	cag aga aac atc tat	cgt cta tta aac aca gct	924	
His Arg Gly Glu Ala	Gln Arg Asn Ile Tyr	Arg Leu Leu Asn Thr Ala		
269	274	279	284	
ttt ggt ctc gtg cac	ctg act gct cac agc	tct ctt gtc tgc ccc ttg	972	
Phe Gly Leu Val His	Leu Thr Ala His Ser	Ser Leu Val Cys Pro Leu		
285	290	295	300	
tcc ttg ggt ggg agc	ctg ggc ctg cga ccc	gag cca cct gtc agc ttc	1020	
Ser Leu Gly Gly Ser	Leu Gly Leu Arg Pro	Glu Pro Pro Val Ser Phe		
301	306	311	316	
cct tac ctg cat tat	gat gcc act ctg ccc	ttc cac tgc agt gcc atc	1068	
Pro Tyr Leu His Tyr	Asp Ala Thr Leu Pro	Phe His Cys Ser Ala Ile		
317	322	327	332	
ctg gct aca gcc ctg	gac aca gtc act gtt	cct tat cgc ctg tgt tcc	1116	
Leu Ala Thr Ala Leu	Asp Thr Val Thr Val	Pro Tyr Arg Leu Cys Ser		
333	338	343	348	
tct cca gtt tcc atg	gtt cat ctg gct gac	atg ctg agc ttc tgt ggg	1164	
Ser Pro Val Ser Met	Val His Leu Ala Asp	Met Leu Ser Phe Cys Gly		
349	354	359	364	
aaa aag gtg gtg aca	gca gga gca atc atc	cct ttc ccc ttg gct cca	1212	
Lys Lys Val Val Thr	Ala Gly Ala Ile Ile	Pro Phe Pro Leu Ala Pro		
365	370	375	380	
ggc cag tcc ctt cct	gat tcc ctg atg cag	ttt gga gga gcc acc cca	1260	
Gly Gln Ser Leu Pro	Asp Ser Leu Met Gln	Phe Gly Gly Ala Thr Pro		
381	386	391	396	
tgg acc cca ctg tct	gca tgt ggg gag cct	tct gga aca cgt tgt ttt	1308	
Trp Thr Pro Leu Ser	Ala Cys Gly Glu Pro	Ser Gly Thr Arg Cys Phe		
397	402	407	412	
gcc cag tca gtg gtg	ctg agg ggt ata gac	aga gca tgc cac aca agc	1356	
Ala Gln Ser Val Val	Leu Arg Gly Ile Asp	Arg Ala Cys His Thr Ser		
413	418	423	428	
cag ctc acc cca ggg	aca cct cca ccc tct	gcc ctt cat gca tgt acc	1404	
Gln Leu Thr Pro Gly	Thr Pro Pro Pro Ser	Ala Leu His Ala Cys Thr		
429	434	439	444	
act ggg gaa gaa atc	ttg gct cag tat tta	caa cag cag cag cct gga	1452	
Thr Gly Glu Glu Ile	Leu Ala Gln Tyr Leu	Gln Gln Gln Gln Pro Gly		
445	450	455	460	

gtc atg agt tct tcc cat ctg ctg ctg act ccc tgc agg gtg gct cct	1500
Val Met Ser Ser Ser His Leu Leu Leu Thr Pro Cys Arg Val Ala Pro	
461 466 471 476	
cct tac ccc cac ctg ttc tca agc tgc agt cca ccg gca gtg gag agc	1548
Pro Tyr Pro His Leu Phe Ser Ser Cys Ser Pro Pro Ala Val Glu Ser	
477 482 487 492	
atc cca gtg ttt ggg gca ctg tgt tcc tct tgc tcc ctg cac cag acc	1596
Ile Pro Val Phe Gly Ala Leu Cys Ser Ser Ser Ser Leu His Gln Thr	
493 498 503 508	
ctg gaa gcc ttg gcc aga gac ctg acc aaa ctg gac ttg cgg cgc tgg	1644
Leu Glu Ala Leu Ala Arg Asp Leu Thr Lys Leu Asp Leu Arg Arg Trp	
509 514 519 524	
gcc agc ttc atg gat gct gga gtg gag cac gat gac gta gca gag ctg	1692
Ala Ser Phe Met Asp Ala Gly Val Glu His Asp Asp Val Ala Glu Leu	
525 530 535 540	
ctg cag gag cta caa agc ctg gcc cag tgc tac cag ggt ggt gac agc	1740
Leu Gln Glu Leu Gln Ser Leu Ala Gln Cys Tyr Gln Gly Gly Asp Ser	
541 546 551 556	
ctc gtg gac taa agt tcccagtgtg ggagaaagga gctagtgtgc aataaaaaca	1795
Leu Val Asp *	
557	
gctggatgca ggagcccagt gtcttcatgc agaggagctc aatgtcgcgg gactagctac	1855
accaacatat gcacttttta catttagaaa cactgtgatt agaccacaga acaataaata	1915
tgtgccatca gaccaaaaaa aagtagagaa aggagctgaa ctccactctc gatgctactt	1975
acagaggaca tctgtaaagt cttcataaaa gaccttgaat gatgcctagg atggcagagc	2035
ccctgggtcc tactccatcc tccagccttt gtcttctgtc tggcctcctg ctctccagat	2095
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tcctcctcat cctcagagct ggcttcacag gcagtgtgga agagctgcat gagttctcga	2335
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aacatt	2401

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<213> Homo sapiens

<220>

<221> CDS

<222> (173)..(2452)

<400> 45

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cagcttggtc gcgacaggtg cgctaggtag agcgccggga cctgtgacag ggctggtagc 120

agcgagagg aaaggcggt tttagccagg tatttcagtg tctgtagaca ag atg 175  
Met  
1

gaa tca tct cca ttt aat aga cgg caa tgg acc tca cta tca ttg agg 223  
Glu Ser Ser Pro Phe Asn Arg Arg Gln Trp Thr Ser Leu Ser Leu Arg  
2 7 12 17

gta aca gcc aaa gaa ctt tct ctt gtc aac aag aac aag tca tcg gct 271  
Val Thr Ala Lys Glu Leu Ser Leu Val Asn Lys Asn Lys Ser Ser Ala  
18 23 28 33

att gtg gaa ata ttc tcc aag tac cag aaa gca gct gaa gaa aca aac 319  
Ile Val Glu Ile Phe Ser Lys Tyr Gln Lys Ala Ala Glu Glu Thr Asn  
34 39 44 49

atg gag aag aag aga agt aac acc gaa aat ctc tcc cag cac ttt aga 367  
Met Glu Lys Lys Arg Ser Asn Thr Glu Asn Leu Ser Gln His Phe Arg  
50 55 60 65

aag ggg acc ctg act gtg tta aag aag aag tgg gag aac cca ggg ctg 415  
Lys Gly Thr Leu Thr Val Leu Lys Lys Lys Trp Glu Asn Pro Gly Leu  
66 71 76 81

gga gca gag tct cac aca gac tct cta cgg aac agc agc act gag att 463  
Gly Ala Glu Ser His Thr Asp Ser Leu Arg Asn Ser Ser Thr Glu Ile  
82 87 92 97

agg cac aga gca gac cat cct cct gct gaa gtg aca agc cac gct gct 511  
Arg His Arg Ala Asp His Pro Pro Ala Glu Val Thr Ser His Ala Ala  
98 103 108 113

tct gga gcc aaa gct gac caa gaa gaa caa atc cac ccc aga tct aga 559  
Ser Gly Ala Lys Ala Asp Gln Glu Glu Gln Ile His Pro Arg Ser Arg  
114 119 124 129

ctc agg tca cct cct gaa gcc ctc gtt cag ggt cga tat ccc cac atc 607  
Leu Arg Ser Pro Pro Glu Ala Leu Val Gln Gly Arg Tyr Pro His Ile  
130 135 140 145

aag gac ggt gag gat ctt aaa gac cac tca aca gaa agt aaa aaa atg 655  
Lys Asp Gly Glu Asp Leu Lys Asp His Ser Thr Glu Ser Lys Lys Met  
146 151 156 161

gaa aat tgt cta gga gaa tcc agg cat gaa gta gaa aaa tca gaa atc 703  
Glu Asn Cys Leu Gly Glu Ser Arg His Glu Val Glu Lys Ser Glu Ile

162	167	172	177	
agt gaa aac aca gat gct tgc ggc aaa ata gag aaa tat aat gtt ccg				751
Ser Glu Asn Thr Asp Ala Ser Gly Lys Ile Glu Lys Tyr Asn Val Pro				
178	183	188	193	
ctg aac agg ctt aag atg atg ttt gag aaa ggt gaa cca act caa act				799
Leu Asn Arg Leu Lys Met Met Phe Glu Lys Gly Glu Pro Thr Gln Thr				
194	199	204	209	
aag att ctc cgg gcc caa agc cga agt gca agt gga agg aag atc tct				847
Lys Ile Leu Arg Ala Gln Ser Arg Ser Ala Ser Gly Arg Lys Ile Ser				
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Ser Ser Ser Thr Phe Asp Ser Glu Lys Asn Glu Ser Arg Arg Asn Leu				
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Glu Leu Pro Arg Leu Ser Glu Thr Ser Ile Lys Asp Arg Met Ala Lys				
258	263	268	273	
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Tyr Gln Ala Ala Val Ser Lys Gln Ser Ser Ser Thr Asn Tyr Thr Asn				
274	279	284	289	
gag ctg aaa gcc agt ggt ggc gaa atc aaa att cat aaa atg gag caa				1087
Glu Leu Lys Ala Ser Gly Gly Glu Ile Lys Ile His Lys Met Glu Gln				
290	295	300	305	
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Lys Glu Asn Val Pro Pro Gly Pro Glu Val Cys Ile Thr His Gln Glu				
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Gly Glu Lys Ile Ser Ala Asn Glu Asn Ser Leu Ala Val Arg Ser Thr				
322	327	332	337	
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Pro Ala Glu Asp Asp Ser Arg Asp Ser Gln Val Lys Ser Glu Val Gln				
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Gln Pro Val His Pro Lys Pro Leu Ser Pro Asp Ser Arg Ala Ser Ser				
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ctt tct gaa agt tct cct ccc aaa gca atg aag aag ttt cag gca cct				1327
Leu Ser Glu Ser Ser Pro Pro Lys Ala Met Lys Lys Phe Gln Ala Pro				
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gca aga gag acc tgc gtg gaa tgt cag aag aca gtc tat cca atg gag				1375
Ala Arg Glu Thr Cys Val Glu Cys Gln Lys Thr Val Tyr Pro Met Glu				
386	391	396	401	

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Arg Leu Leu Ala Asn Gln Gln Val Phe His Ile Ser Cys Phe Arg Cys	
402 407 412 417	
tcc tat tgc aac aac aaa ctc agt cta gga aca tat gca tct tta cat	1471
Ser Tyr Cys Asn Asn Lys Leu Ser Leu Gly Thr Tyr Ala Ser Leu His	
418 423 428 433	
gga aga atc tat tgt aag cct cac ttc aat caa ctc ttt aaa tct aag	1519
Gly Arg Ile Tyr Cys Lys Pro His Phe Asn Gln Leu Phe Lys Ser Lys	
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Gly Asn Tyr Asp Glu Gly Phe Gly His Arg Pro His Lys Asp Leu Trp	
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Ala Ser Lys Asn Glu Asn Glu Glu Ile Leu Glu Arg Pro Ala Gln Leu	
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Ala Asn Ala Arg Glu Thr Pro His Ser Pro Gly Val Glu Asp Ala Pro	
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att gct aag gtg ggt gtc ctg gct gca agt atg gaa gcc aag gcc tcc	1711
Ile Ala Lys Val Gly Val Leu Ala Ala Ser Met Glu Ala Lys Ala Ser	
498 503 508 513	
tct cag cag gag aag gaa gac aag cca gct gaa acc aag aag ctg agg	1759
Ser Gln Gln Glu Lys Glu Asp Lys Pro Ala Glu Thr Lys Lys Leu Arg	
514 519 524 529	
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Ile Ala Trp Pro Pro Thr Glu Leu Gly Ser Ser Gly Ser Ala Leu	
530 535 540 545	
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Glu Glu Gly Ile Lys Met Ser Lys Pro Lys Trp Pro Pro Glu Asp Glu	
546 551 556 561	
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Ile Ser Lys Pro Glu Val Pro Glu Asp Val Asp Leu Asp Leu Lys Lys	
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578 583 588 593	
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Ala Ala Ser Phe Gln Ser Thr Ser Val Lys Ser Pro Lys Thr Val Ser	
594 599 604 609	
cca cct atc agg aaa ggc tgg agc atg tca gag cag agt gaa gag tct	2047
Pro Pro Ile Arg Lys Gly Trp Ser Met Ser Glu Gln Ser Glu Glu Ser	
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tct aag aag aat ggg aat gtg gga aaa aca acc tgg caa aac aaa gaa	2143
Ser Lys Lys Asn Gly Asn Val Gly Lys Thr Thr Trp Gln Asn Lys Glu	
642 647 652 657	
tct aaa gga gag aca ggg aag aga agt aag gaa ggt cat agt ttg gag	2191
Ser Lys Gly Glu Thr Gly Lys Arg Ser Lys Glu Gly His Ser Leu Glu	
658 663 668 673	
atg gag aat gag aat ctt gta gaa aat ggt gca gac tcc gat gaa gat	2239
Met Glu Asn Glu Asn Leu Val Glu Asn Gly Ala Asp Ser Asp Glu Asp	
674 679 684 689	
gat aac agc ttc ctc aaa caa caa tct cca caa gaa ccc aag tct ctg	2287
Asp Asn Ser Phe Leu Lys Gln Gln Ser Pro Gln Glu Pro Lys Ser Leu	
690 695 700 705	
aat tgg tcg agt ttt gta gac aac acc ttt gct gaa gaa ttc act act	2335
Asn Trp Ser Ser Phe Val Asp Asn Thr Phe Ala Glu Glu Phe Thr Thr	
706 711 716 721	
cag aat cag aaa tcc cag gat gtg gaa ctc tgg gag gga gaa gtg gtc	2383
Gln Asn Gln Lys Ser Gln Asp Val Glu Leu Trp Glu Gly Glu Val Val	
722 727 732 737	
aaa gag ctc tct gtg gaa gaa cag ata aag aga aat cgg tat tat gat	2431
Lys Glu Leu Ser Val Glu Glu Gln Ile Lys Arg Asn Arg Tyr Tyr Asp	
738 743 748 753	
gag gat gag gat gaa gag tga ca aattgcaatg atgctgggcc ttaaattcat	2484
Glu Asp Glu Asp Glu Glu *	
754 759	
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 acggtcacac cgcggcgaat taattcccaa agactc atg tta cat gag aaa gcc 174  
 Met Leu His Glu Lys Ala  
 1  
 acc aag aag acc aaa gaa aag gag aca agg atg gct ctt cct cag gga 222  
 Thr Lys Lys Thr Lys Glu Lys Glu Thr Arg Met Ala Leu Pro Gln Gly  
 7 12 17 22  
 tgc ttg act ttc aag gat gtg gct ata gaa ttc tct ttg gag gag tgg 270  
 Cys Leu Thr Phe Lys Asp Val Ala Ile Glu Phe Ser Leu Glu Glu Trp  
 23 28 33 38  
 aaa tgc ctg aac cct gca cag agg gct tta tac agg gcc gtg atg ttg 318  
 Lys Cys Leu Asn Pro Ala Gln Arg Ala Leu Tyr Arg Ala Val Met Leu  
 39 44 49 54  
 gag aac tac agg aac ctg gag tct gtg gga ttg act tct aag gac tct 366  
 Glu Asn Tyr Arg Asn Leu Glu Ser Val Gly Leu Thr Ser Lys Asp Ser  
 55 60 65 70  
 tgg tac atg agg aag aaa ccc gga agg gga aga gga aag caa agg cgt 414  
 Trp Tyr Met Arg Lys Lys Pro Gly Arg Gly Arg Gly Lys Gln Arg Arg  
 71 76 81 86  
 cag gaa tgg ttc ttc ctc agg gtc tat tga c attcagggat gtggccatag 465  
 Gln Glu Trp Phe Phe Leu Arg Val Tyr \*  
 87 92  
 aattctctca ggaggagtgg aaatgcctgg accctgctca gaggactota tacagagatg 525  
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                               Met Ser Gln
                               1

ctg gtg gaa tgc gtc ccc aac ttt tgc gag ggg aag aac cag gag gtg      163
Leu Val Glu Cys Val Pro Asn Phe Ser Glu Gly Lys Asn Gln Glu Val
  4                               9              14              19

atc gac gcc atc tct gga gcc atc aca cag acc ccg ggc tgc gtg ctg      211
Ile Asp Ala Ile Ser Gly Ala Ile Thr Gln Thr Pro Gly Cys Val Leu
  20                               25              30              35

ctg gat gtg gac gca ggc cct tcc acc aac cgc acc gtg tac acc ttc      259
Leu Asp Val Asp Ala Gly Pro Ser Thr Asn Arg Thr Val Tyr Thr Phe
  36                               41              46              51

gtg ggg ccg ccg gag tgc gtg gtg gag ggg gcc ctc aac gct gcc cgg      307
Val Gly Pro Pro Glu Cys Val Val Glu Gly Ala Leu Asn Ala Ala Arg
  52                               57              62              67

gta gct tcc cga ctt atc gac atg agc agg cac caa gga gag cac ccc      355
Val Ala Ser Arg Leu Ile Asp Met Ser Arg His Gln Gly Glu His Pro
  68                               73              78              83

cgc atg ggg gcc cta gac gtc tgc ccc ttc atc ccc gtg agg ggc gtc      403
Arg Met Gly Ala Leu Asp Val Cys Pro Phe Ile Pro Val Arg Gly Val
  84                               89              94              99

agc gtg gat gag tgt gtg ctc tgc gcc cag gcc ttt ggc cag agg ctg      451
Ser Val Asp Glu Cys Val Leu Cys Ala Gln Ala Phe Gly Gln Arg Leu
  100                              105              110              115

gca gag gag ctg gac gtg cca ggc ctg acc gcc ggg ctc tcc tgc agt      499
Ala Glu Glu Leu Asp Val Pro Gly Leu Thr Ala Gly Leu Ser Cys Ser
  116                              121              126              131

tac ctg tac ggc gag gca gcc agg atg gac agt cgc cgg acc ctg ccg      547
Tyr Leu Tyr Gly Glu Ala Ala Arg Met Asp Ser Arg Arg Thr Leu Pro
  132                              137              142              147

gcc atc cgg gcc ggg gag tac gag gcc ctc cct aag aag ctc cag cag      595
Ala Ile Arg Ala Gly Glu Tyr Glu Ala Leu Pro Lys Lys Leu Gln Gln
  148                              153              158              163

gcc gac tgg gcg ccc gac ttt ggt ccc agc tcc ttt gtc ccc agt tgg      643
Ala Asp Trp Ala Pro Asp Phe Gly Pro Ser Ser Phe Val Pro Ser Trp
  164                              169              174              179

ggg gcc acg gcc acg ggg gcg agg aag ttc ctc att gct ttt aac atc      691
Gly Ala Thr Ala Thr Gly Ala Arg Lys Phe Leu Ile Ala Phe Asn Ile

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180	185	190	195	
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196	201	206	211	
cgg gag cag ggc cgc ggg aag gac cag cca gga cgt ctg aag aaa gtt				787
Arg Glu Gln Gly Arg Gly Lys Asp Gln Pro Gly Arg Leu Lys Lys Val				
212	217	222	227	
cag ggc ttt ggc tgg tac ctg gat gag aag aac ctg gct cag gtg tcc				835
Gln Gly Phe Gly Trp Tyr Leu Asp Glu Lys Asn Leu Ala Gln Val Ser				
228	233	238	243	
acc aat ctt ctg gac ttt gag gtc acg gca ctg cac acg gtc tac gag				883
Thr Asn Leu Leu Asp Phe Glu Val Thr Ala Leu His Thr Val Tyr Glu				
244	249	254	259	
gag acc tgc cga gaa gca cag gag ctg agc ctc cca gtg gtg ggc tca				931
Glu Thr Cys Arg Glu Ala Gln Glu Leu Ser Leu Pro Val Val Gly Ser				
260	265	270	275	
cag ctg gtg ggc ctg gtg ccc ctg aag gct ctg ctg gat gcg gcc gcc				979
Gln Leu Val Gly Leu Val Pro Leu Lys Ala Leu Leu Asp Ala Ala Ala				
276	281	286	291	
ttc tac tgc gag aag gag aac ctc ttc atc ctg gag gag gag cag cgg				1027
Phe Tyr Cys Glu Lys Glu Asn Leu Phe Ile Leu Glu Glu Glu Gln Arg				
292	297	302	307	
atc agg ctg gtg gtg agc cgg ctg ggc ctg gac tcc ctg tgc ccc ttc				1075
Ile Arg Leu Val Val Ser Arg Leu Gly Leu Asp Ser Leu Cys Pro Phe				
308	313	318	323	
agc cct aag gag cgg atc atc gag tac ctg gtc cct gag cgc ggg cct				1123
Ser Pro Lys Glu Arg Ile Ile Glu Tyr Leu Val Pro Glu Arg Gly Pro				
324	329	334	339	
gag cga ggc ctg ggc agc aag tcc ctg cgc gcc ttc gtg ggg gag gtg				1171
Glu Arg Gly Leu Gly Ser Lys Ser Leu Arg Ala Phe Val Gly Glu Val				
340	345	350	355	
ggg gcc cgc tct gcg gcc ccc ggg ggc ggc tgc gtg gcg gcg gcc gct				1219
Gly Ala Arg Ser Ala Ala Pro Gly Gly Gly Ser Val Ala Ala Ala Ala				
356	361	366	371	
gcg gcc atg ggt gcg gcg ctg ggc tcc atg gtg ggc ctc atg acc tac				1267
Ala Ala Met Gly Ala Ala Leu Gly Ser Met Val Gly Leu Met Thr Tyr				
372	377	382	387	
ggg cgg cgc caa ttc cag tcc ctg gac acg acg atg cgg cgc ctg atc				1315
Gly Arg Arg Gln Phe Gln Ser Leu Asp Thr Thr Met Arg Arg Leu Ile				
388	393	398	403	
ccg ccc ttc cgc gag gct tgc gcc aag cta acc acg ctg gtg gat gcc				1363
Pro Pro Phe Arg Glu Ala Ser Ala Lys Leu Thr Thr Leu Val Asp Ala				
404	409	414	419	

gac gcc gag gcc ttc acc gcc tac ctg gaa gca atg agg ctc ccc aag	1411
Asp Ala Glu Ala Phe Thr Ala Tyr Leu Glu Ala Met Arg Leu Pro Lys	
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Cys Arg Ser Asp Leu Gln Val Ala Ala Lys Ala Leu Glu Met Gly Val	
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Phe Gly Ala Tyr Phe Asn Val Leu Ile Asn Leu Arg Asp Ile Thr Asp	
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Glu Ala Phe Lys Asp Gln Ile His His Arg Val Ser Ser Leu Leu Gln	
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	Met Thr
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ccg gac att atc ctg cag cgt acc ggg atc gat gtg aga gct gtc gaa	645
Pro Asp Ile Ile Leu Gln Arg Thr Gly Ile Asp Val Arg Ala Val Glu	
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Gln Gly Glu Asp Ala Trp His Lys Leu Arg Leu Gly Val Ile Thr Ala	
19 24 29 34	
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Ser Glu Val His Asn Val Ile Ala Lys Pro Arg Ser Gly Lys Lys Trp	
35 40 45 50	
cct gac atg aaa atg tcc tac ttc cac acc ctg ctt gct gag gtt tgc	789
Pro Asp Met Lys Met Ser Tyr Phe His Thr Leu Leu Ala Glu Val Cys	
51 56 61 66	
acc ggt gtg gct ccg gaa gtt aac gct aaa gca ctg gcc tgg gga aaa	837
Thr Gly Val Ala Pro Glu Val Asn Ala Lys Ala Leu Ala Trp Gly Lys	

67	72	77	82	
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Gln Tyr Glu Asn Asp Ala Arg Thr Leu Phe Glu Phe Thr Ser Gly Val				
83	88	93	98	
aat gtt act gaa tcc ccg atc atc tat cgc gac gaa agt atg cgt acc				933
Asn Val Thr Glu Ser Pro Ile Ile Tyr Arg Asp Glu Ser Met Arg Thr				
99	104	109	114	
gcc tgc tct ccc gat ggt tta tgc agt gac ggc aac ggc ctt gaa ctg				981
Ala Cys Ser Pro Asp Gly Leu Cys Ser Asp Gly Asn Gly Leu Glu Leu				
115	120	125	130	
aaa tgc ccg ttt acc tcc cgg gat ttc atg aag ttc cgg ctc ggt ggt				1029
Lys Cys Pro Phe Thr Ser Arg Asp Phe Met Lys Phe Arg Leu Gly Gly				
131	136	141	146	
ttc gag gcc ata aag tca gct tac atg gcc cag gtg cag tac agc atg				1077
Phe Glu Ala Ile Lys Ser Ala Tyr Met Ala Gln Val Gln Tyr Ser Met				
147	152	157	162	
tgg gtg acg cga aaa aat gcc tgg tac ttt gcc aac tat gac ccg cgt				1125
Trp Val Thr Arg Lys Asn Ala Trp Tyr Phe Ala Asn Tyr Asp Pro Arg				
163	168	173	178	
atg aag cgt gaa ggc ctg cat tat gtc gtg att gag cgg gat gaa aag				1173
Met Lys Arg Glu Gly Leu His Tyr Val Val Ile Glu Arg Asp Glu Lys				
179	184	189	194	
tac atg gcg agt ttt gac gag atc gtg ccg gag ttc atc gaa aaa atg				1221
Tyr Met Ala Ser Phe Asp Glu Ile Val Pro Glu Phe Ile Glu Lys Met				
195	200	205	210	
gac gag gca ctg gct gaa att ggt ttt gta ttt ggg gag caa tgg cga				1269
Asp Glu Ala Leu Ala Glu Ile Gly Phe Val Phe Gly Glu Gln Trp Arg				
211	216	221	226	
tga cgca tcctcagat aatatccggg taggcgcaat cactttcgtc tactccgtta				1326
*				
227				
caaagcgagg ctgggtatatt cccggccttt ctgttatccg aaatccactg aaagcacagc				1386
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gttaagaacg agtatcgaga tggcacatag ccttgctcaa attggaatca ggtttgtgcc				1506
aataccagta gaaacagacg aagaatttca tacgttagcc gcatcccttt cacaaaagct				1566
ggaaatgatg gtggcgaaag cagaagcaga tgagagagac caggtatgac aaccacggaa				1626
tgcatttttc tggcagcggg cttcatattc tgtgtgctta tgcttgccga catgggactt				1686
gttcaatgac acctcagcag gaaaacgccc ttgcgagcat tgcccgtcag gctaattctg				1746
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 Met Met Lys Lys Thr Leu Lys Cys Ile Arg Trp Ser Leu Pro  
 1 5 10  
 gaa atg gcc agc atc ggg ctg ctg ctg gcc atc cac ctg tgc ctc ttc 158  
 Glu Met Ala Ser Ile Gly Leu Leu Leu Ala Ile His Leu Cys Leu Phe  
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 acc atg ttc gga atg ctg ctg ttc gct gga ggg aag cag gat gat ggg 206  
 Thr Met Phe Gly Met Leu Leu Phe Ala Gly Gly Lys Gln Asp Asp Gly  
 31 36 41 46  
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Gln Asp Arg Glu Arg Leu Thr Tyr Phe Gln Asn Leu Pro Glu Ser Leu	
47 52 57 62	
act tcc ctc ctg gtg ctg ctg acc acg gcc aac aac ccc gat gtg atg	302
Thr Ser Leu Leu Val Leu Leu Thr Thr Ala Asn Asn Pro Asp Val Met	
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att cct gcg tat tcc aag aac cgg gcc tat gcc atc ttc ttc ata gtc	350
Ile Pro Ala Tyr Ser Lys Asn Arg Ala Tyr Ala Ile Phe Phe Ile Val	
79 84 89 94	
ttc act gtg ata gga agc ctg ttt ctg atg aac ctg ctg aca gcc atc	398
Phe Thr Val Ile Gly Ser Leu Phe Leu Met Asn Leu Leu Thr Ala Ile	
95 100 105 110	
atc tac agt cag ttc cgg ggc tac ctg atg aaa tct ctc cag acc tgc	446
Ile Tyr Ser Gln Phe Arg Gly Tyr Leu Met Lys Ser Leu Gln Thr Ser	
111 116 121 126	
ctg ttt cgg agg cgg ctg gga acc cgg gct gcc ttt gaa gtc cta tcc	494
Leu Phe Arg Arg Arg Leu Gly Thr Arg Ala Ala Phe Glu Val Leu Ser	
127 132 137 142	
tcc atg gtg ggg gag gga gga gcc ttc cct cag gca gtt ggg gtg aag	542
Ser Met Val Gly Glu Gly Gly Ala Phe Pro Gln Ala Val Gly Val Lys	
143 148 153 158	
ccc cag aac ttg ctg cag gtg ctt cag aag gtc cag ctg gac agc tcc	590
Pro Gln Asn Leu Leu Gln Val Leu Gln Lys Val Gln Leu Asp Ser Ser	
159 164 169 174	
cac aaa cag gcc atg atg gag aag gtg cgt tcc tac ggc agt gtt ctg	638
His Lys Gln Ala Met Met Glu Lys Val Arg Ser Tyr Gly Ser Val Leu	
175 180 185 190	
ctg tca gct gag gag ttt cag aag ctc ttc aac gag ctt gac aga agt	686
Leu Ser Ala Glu Glu Phe Gln Lys Leu Phe Asn Glu Leu Asp Arg Ser	
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Val Val Lys Glu His Pro Pro Arg Pro Glu Tyr Gln Ser Pro Phe Leu	
207 212 217 222	
cag agc gcc cag ttc ctc ttc ggc cac tac tac ttt gac tac ctg ggg	782
Gln Ser Ala Gln Phe Leu Phe Gly His Tyr Tyr Phe Asp Tyr Leu Gly	
223 228 233 238	
aac ctc atc gcc ctg gca aac ctg gtg tcc att tgc gtg ttc ctg gtg	830
Asn Leu Ile Ala Leu Ala Asn Leu Val Ser Ile Cys Val Phe Leu Val	
239 244 249 254	
ctg gat gca gat gtg ctg cct gct gag cgt gat gac ttc atc ctg ggg	878
Leu Asp Ala Asp Val Leu Pro Ala Glu Arg Asp Asp Phe Ile Leu Gly	
255 260 265 270	
att ctc aac tgc gtc ttc att gtg tac tac ctg ttg gag atg ctg ctc	926
Ile Leu Asn Cys Val Phe Ile Val Tyr Tyr Leu Leu Glu Met Leu Leu	

271	276	281	286	
aag gtc ttt gcc ctg	ggc ctg cga ggg tac	ctg tcc tac ccc agc aac		974
Lys Val Phe Ala Leu	Gly Leu Arg Gly Tyr	Leu Ser Tyr Pro Ser Asn		
287	292	297	302	
gtg ttt gac ggg ctc	ctc acc gtt gtc ctg	ctg gtt ttg gag atc tca		1022
Val Phe Asp Gly Leu	Leu Thr Val Val Leu	Leu Val Leu Glu Ile Ser		
303	308	313	318	
act ctg gct gtg tac	cga ttg cca cac cca	ggc tgg agg ccg gag atg		1070
Thr Leu Ala Val Tyr	Arg Leu Pro His Pro	Gly Trp Arg Pro Glu Met		
319	324	329	334	
gtg ggc ctg ctg tcg	ctg tgg gac atg acc	cgc atg ctg aac atg ctc		1118
Val Gly Leu Leu Ser	Leu Trp Asp Met Thr	Arg Met Leu Asn Met Leu		
335	340	345	350	
atc gtg ttc cgc ttc	ctg cgt atc atc ccc	agc atg aag ccg atg gcc		1166
Ile Val Phe Arg Phe	Leu Arg Ile Ile Pro	Ser Met Lys Pro Met Ala		
351	356	361	366	
gtg gtg gcc agt acc	gtc ctg ggc ctg gtg	cag aac atg cgt gcg ttt		1214
Val Val Ala Ser Thr	Val Leu Gly Leu Val	Gln Asn Met Arg Ala Phe		
367	372	377	382	
ggc ggg atc ctg gtg	gtg gtc tac tac gta	ttt gcc atc att ggg atc		1262
Gly Gly Ile Leu Val	Val Val Tyr Tyr Val	Phe Ala Ile Ile Gly Ile		
383	388	393	398	
aac ttg ttt aga ggc	gtc att gtg gct ctt	cct gga aac agc agc ctg		1310
Asn Leu Phe Arg Gly	Val Ile Val Ala Leu	Pro Gly Asn Ser Ser Leu		
399	404	409	414	
gcc cct gcc aat ggc	tcg gcg ccc tgt ggg	agc ttc gag cag ctg gag		1358
Ala Pro Ala Asn Gly	Ser Ala Pro Cys Gly	Ser Phe Glu Gln Leu Glu		
415	420	425	430	
tac tgg gcc aac aac	ttc gat gac ttt gcg	gct gcc ctg gtc act ctg		1406
Tyr Trp Ala Asn Asn	Phe Asp Asp Phe Ala	Ala Ala Leu Val Thr Leu		
431	436	441	446	
tgg aac ttg atg gtg	gtg aac aac tgg cag	gtg ttt ctg gat gca tat		1454
Trp Asn Leu Met Val	Val Asn Asn Trp Gln	Val Phe Leu Asp Ala Tyr		
447	452	457	462	
cgg cgc tac tca ggc	ccg tgg tcc aag atc	tat ttt gta ttg tgg tgg		1502
Arg Arg Tyr Ser Gly	Pro Trp Ser Lys Ile	Tyr Phe Val Leu Trp Trp		
463	468	473	478	
ctg gtg tcg tct gtc	atc tgg gtc aac ctg	ttt ctg gcc ctg att ctg		1550
Leu Val Ser Ser Val	Ile Trp Val Asn Leu	Phe Leu Ala Leu Ile Leu		
479	484	489	494	
gag aac ttc ctt cac	aag tgg gac ccc cgc	agc cac ctg cag ccc ctt		1598
Glu Asn Phe Leu His	Lys Trp Asp Pro Arg	Ser His Leu Gln Pro Leu		
495	500	505	510	

gct ggg acc cca gag gcc acc tac cag atg act gtg gag ctc ctg ttc	1646
Ala Gly Thr Pro Glu Ala Thr Tyr Gln Met Thr Val Glu Leu Leu Phe	
511 516 521 526	
agg gat att ctg gag gag ccc gag gag gat gag ctc aca gag agg ctg	1694
Arg Asp Ile Leu Glu Glu Pro Glu Glu Asp Glu Leu Thr Glu Arg Leu	
527 532 537 542	
agc cag cac ccg cac ctg tgg ctg tgc agg tga cgtccggg ctgccgtccc	1745
Ser Gln His Pro His Leu Trp Leu Cys Arg *	
543 548 553	
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catgctgtgg ccagccaggc aggaagagac ctttctctg acggaccact aagctgggga	1865
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cagggaggcg ccgtgccctc cgctttcttt tatagctgct tcagtgagaa ttccctcgtc	1985
gactccacag ggacctttca gacaaaaatg caagaagcag cggcctcccc tgtccctgct	2045
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gcacaggtta accgtcagac ttccggggca ttcagggtggg gatgctggtg gtttgacatg	2165
gagagaacct tgactgtgtt ttattatttc atggcttgta tgagtgtgac tgggtgtgtt	2225
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gtcaagcaat agtgaaccaa aatgcagaga cagaacttat gctggaagga gacgatgatg	180
cagtcagtct gctacaggag aaagaaattg acaaccttgc aggccagtg gttctcagca	240
cccctgccca gctcatcgct cccgtgggtg tggccaaggg gactctctcc atcaccacga	300
cagaaatcta cttcgaggta gatgaggatg actctgcctt caagaagatc gacacgaaag	360

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tttcaagacg ttaccttcta caaaacactg ctttgggaagt atttatggca aaccgaacct	480
cagttatgtt taatttcctt gatcaagcaa cagtaaaaaa agttgtctat agcttgccctc	540
gggttggagt agggaccagc tatggtctgc cacaagccag gaggatatca ttggccactc	600
ctcgacagct ttataaattt ccaat atg act cag cgc tgg caa aga agg gaa	652
Met Thr Gln Arg Trp Gln Arg Arg Glu	
1 5	
att tca aac ttc gaa tat ttg atg ttc ctt aat act att gca gga cgg	700
Ile Ser Asn Phe Glu Tyr Leu Met Phe Leu Asn Thr Ile Ala Gly Arg	
10 15 20 25	
aca tat aat gat ctg aac caa tat cca gtg ttt ccg tgg gtg tta acc	748
Thr Tyr Asn Asp Leu Asn Gln Tyr Pro Val Phe Pro Trp Val Leu Thr	
26 31 36 41	
aac tat gaa tca gaa gag ttg gac ctg act ctt cca gga aac ttc agg	796
Asn Tyr Glu Ser Glu Glu Leu Asp Leu Thr Leu Pro Gly Asn Phe Arg	
42 47 52 57	
gat cta tca aag cca att ggt gct ttg aac ccc aag aga gct gtg ttt	844
Asp Leu Ser Lys Pro Ile Gly Ala Leu Asn Pro Lys Arg Ala Val Phe	
58 63 68 73	
tat gca gag cgt tat gag aca tgg gaa gat gat caa agc cca ccc tac	892
Tyr Ala Glu Arg Tyr Glu Thr Trp Glu Asp Asp Gln Ser Pro Pro Tyr	
74 79 84 89	
cat tat aat acc cat tat tca aca gca aca tct act tta tcc tgg ctt	940
His Tyr Asn Thr His Tyr Ser Thr Ala Thr Ser Thr Leu Ser Trp Leu	
90 95 100 105	
gtt cga att gaa cct ttc aca acc ttc ttc ctc aat gca aat gat gga	988
Val Arg Ile Glu Pro Phe Thr Thr Phe Phe Leu Asn Ala Asn Asp Gly	
106 111 116 121	
aaa ttt gat cat cca gat cga acc ttc tca tcc gtt gca agg tct tgg	1036
Lys Phe Asp His Pro Asp Arg Thr Phe Ser Ser Val Ala Arg Ser Trp	
122 127 132 137	
aga act agt cag aga gat act tct gat gta aag gaa cta att cca gag	1084
Arg Thr Ser Gln Arg Asp Thr Ser Asp Val Lys Glu Leu Ile Pro Glu	
138 143 148 153	
ttc tac tac cta cca gag atg ttt gtc aac agt aat gga tat aat ctt	1132
Phe Tyr Tyr Leu Pro Glu Met Phe Val Asn Ser Asn Gly Tyr Asn Leu	
154 159 164 169	
gga gtc aga gaa gat gaa gta gtg gta aat gat gtt gat ctt ccc cct	1180
Gly Val Arg Glu Asp Glu Val Val Val Asn Asp Val Asp Leu Pro Pro	
170 175 180 185	

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Trp Ala Lys Lys Pro Glu Asp Phe Val Arg Ile Asn Arg Met Ala Leu	
186 191 196 201	
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Glu Ser Glu Phe Val Ser Cys Gln Leu His Gln Trp Ile Asp Leu Ile	
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Phe Gly Tyr Lys Gln Arg Gly Pro Glu Ala Val Arg Ala Leu Asn Val	
218 223 228 233	
ttt cac tac ttg act tat gaa ggc tct gtg aac ctg gat agt atc act	1372
Phe His Tyr Leu Thr Tyr Glu Gly Ser Val Asn Leu Asp Ser Ile Thr	
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Asp Pro Val Leu Arg Glu Ala Met Glu Ala Gln Ile Gln Asn Phe Gly	
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Gln Thr Pro Ser Gln Leu Leu Ile Glu Pro His Pro Pro Arg Ser Ser	
266 271 276 281	
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Ala Met His Leu Cys Phe Leu Pro Gln Ser Pro Leu Met Phe Lys Asp	
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Gln Met Gln Gln Asp Val Ile Met Val Leu Lys Phe Pro Ser Asn Ser	
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Pro Val Thr His Val Ala Ala Asn Thr Leu Pro His Leu Thr Ile Pro	
314 319 324 329	
gca gtg gtg aca gtg act tgc agc cga ctc ttt gca gtg aat aga tgg	1660
Ala Val Val Thr Val Thr Cys Ser Arg Leu Phe Ala Val Asn Arg Trp	
330 335 340 345	
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His Asn Thr Val Gly Leu Arg Gly Ala Pro Gly Tyr Ser Leu Asp Gln	
346 351 356 361	
gcc cac cat ctt ccc att gaa atg gat cca tta ata gcc aat aat tca	1756
Ala His His Leu Pro Ile Glu Met Asp Pro Leu Ile Ala Asn Asn Ser	
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Ile Asn Ala His Cys Phe Val Val Thr Ala Asp Asn Arg Tyr Ile Leu	
394 399 404 409	
atc tgt gga ttc tgg gat aag agc ttc aga gtt tat tct aca gaa aca	1900



Ile Cys Gly Phe Trp Asp Lys Ser Phe Arg Val Tyr Ser Thr Glu Thr	
410 415 420 425	
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Gly Lys Leu Thr Gln Ile Val Phe Gly His Trp Asp Val Val Thr Cys	
426 431 436 441	
ttg gcc agg tcc gag tca tac att ggt ggg gac tgc tac atc gtg tcc	1996
Leu Ala Arg Ser Glu Ser Tyr Ile Gly Gly Asp Cys Tyr Ile Val Ser	
442 447 452 457	
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Gly Ser Arg Asp Ala Thr Leu Leu Leu Trp Tyr Trp Ser Gly Arg His	
458 463 468 473	
cat atc ata gga gac aac cct aac agc agt gac tat ccg gca cca aga	2092
His Ile Ile Gly Asp Asn Pro Asn Ser Ser Asp Tyr Pro Ala Pro Arg	
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Ala Val Leu Thr Gly His Asp His Glu Val Val Cys Val Ser Val Cys	
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Ala Glu Leu Gly Leu Val Ile Ser Gly Ala Lys Glu Gly Pro Cys Leu	
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Val His Thr Ile Thr Gly Asp Leu Leu Arg Ala Leu Glu Gly Pro Glu	
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Asn Cys Leu Phe Pro Arg Leu Ile Ser Val Ser Ser Glu Gly His Cys	
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Leu Ser Ser Asp Gly Gln Asn Leu Val Thr Gly Gly Asp Asn Gly Val	
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Val Glu Val Trp Gln Ala Cys Asp Phe Lys Gln Leu Tyr Ile Tyr Pro	
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Thr Leu Ile Thr Gly Met Ala Ser Gly Ser Ile Val Ala Phe Asn Ile	







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Cys Gly Asn Ile Ile Asn Met His Asn Val Lys Leu Phe Leu Phe Gln	
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His Pro Ala Gly Ile Ser Asp Leu Leu Ala Glu Val Ser Ala Glu Val  
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Glu Asp Cys Gln Gln His Arg Val Thr Val Phe Gln Tyr Ile Gly Glu	
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Gln Val Glu Thr Tyr Leu Arg Ser Glu Gly Val Leu Val Arg Tyr Trp		
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Tyr Pro Ile Asp Met Leu Glu Arg Pro Pro Ala Gly Tyr Arg Arg Thr		
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Arg Glu Leu Leu Arg Cys Glu Ala Ala Leu Ala Arg Leu Tyr Cys Arg		
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Ile Ser Ser Ser Ser Ile Leu Leu Ala Gln Ser Leu Gln His Cys Ile		
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His Ser Gln Asn Cys Ser Ala Thr Asp Leu Phe Tyr Gln Gly Asn Ser		
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Val Val Ser Cys Lys Glu Ser Gln Ser Gly Phe Arg Lys Asp Ser Ser	
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Leu Tyr Lys Ala Pro Trp Ala Arg Val Leu Val Tyr Gly Leu Gly His	
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Gly Ile Ala Val Ser Leu Ser Phe Leu Ala Leu Leu Tyr Ile Phe Phe	
526 531 536 541	
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Ile Val Ile Tyr Phe Gly Gly Arg Arg Glu Gly Glu Ser Trp Asn Trp	
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Ala Trp Val Leu Ser Thr Arg Leu Ala Arg His Ile Gly Tyr Leu Glu	
558 563 568 573	
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Leu Leu Leu Lys Leu Met Phe Val Asn Pro Pro Glu Leu Pro Glu Gln	
574 579 584 589	
act act aaa gct tta cct gtg agg ttt ttg ttt aca gat tac aat aga	2006
Thr Thr Lys Ala Leu Pro Val Arg Phe Leu Phe Thr Asp Tyr Asn Arg	
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Leu Ser Ser Val Gly Gly Glu Thr Ser Leu Ala Glu Met Ile Ala Thr	
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Leu Ser Asp Ala Cys Glu Arg Glu Phe Gly Phe Leu Ala Thr Arg Leu	
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Phe Arg Val Phe Lys Thr Glu Asp Thr Gln Gly Lys Lys Lys Trp Lys	
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Lys Thr Cys Cys Leu Pro Ser Phe Val Ile Phe Leu Phe Ile Ile Gly	
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Cys Ile Ile Ser Gly Ile Thr Leu Leu Ala Ile Phe Arg Val Asp Pro	
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Lys His Leu Thr Val Asn Ala Val Leu Ile Ser Ile Ala Ser Val Val	
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Gly Leu Ala Phe Val Leu Asn Cys Arg Thr Trp Trp Gln Val Leu Asp	
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Ser Leu Leu Asn Ser Gln Arg Lys Arg Leu His Asn Ala Ala Ser Lys	
718 723 728 733	
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Leu His Lys Leu Lys Ser Glu Gly Phe Met Lys Val Leu Lys Cys Glu	
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Val Glu Leu Met Ala Arg Met Ala Lys Thr Ile Asp Ser Phe Thr Gln	
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Gln Asp Lys Val Leu	Gln Met Leu Asp Thr	Val Arg Val Leu Phe Ser		
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Lys Gly Pro Phe Ile	Ala Ile Phe Ala Ser	Asp Pro His Ile Ile Ile		
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Lys Ala Ile Asn Gln	Asn Leu Asn Ser Val	Leu Arg Asp Ser Asn Ile		
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Asn Gly His Asp Tyr	Met Arg Asn Ile Val	His Leu Pro Val Phe Leu		
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Asn Ser Arg Gly Leu	Ser Asn Ala Arg Lys	Phe Leu Val Thr Ser Ala		
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Thr Asn Gly Asp Val	Pro Cys Ser Asp Thr	Thr Gly Ile Gln Glu Asp		
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Ala Asp Arg Arg Val	Ser Gln Asn Ser Leu	Gly Glu Met Thr Lys Leu		
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Gly Ser Lys Thr Ala	Leu Asn Arg Arg Asp	Thr Tyr Arg Arg Arg Gln		
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Thr Glu Gly Ile Pro	Asp Gln Met Thr Leu	Lys Thr Ile Tyr Glu Arg		
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1

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357					362					367					372	
gaa	atg	gag	aca	ggg	ctg	aaa	gca	atg	gga	aga	gag	att	tgt	cta	agg	1685
Glu	Met	Glu	Thr	Gly	Leu	Lys	Ala	Met	Gly	Arg	Glu	Ile	Cys	Leu	Arg	
373					378					383					388	
gag	aag	acg	cca	gag	gtg	att	gat	gcc	act	gag	gaa	ata	gac	aaa	gat	1733
Glu	Lys	Thr	Pro	Glu	Val	Ile	Asp	Ala	Thr	Glu	Glu	Ile	Asp	Lys	Asp	



389	394	399	404	
ttg gaa gaa gct gga aga aga gaa ata tcc cca cag aaa aat ggc cca				1781
Leu Glu Glu Ala Gly Arg Arg Glu Ile Ser Pro Gln Lys Asn Gly Pro				
405	410	415	420	
gag gag gtt aag cct cta ggt gaa gtg gag aca gat ttg aaa gca act				1829
Glu Glu Val Lys Pro Leu Gly Glu Val Glu Thr Asp Leu Lys Ala Thr				
421	426	431	436	
gga aat gag agt tcc cca agg gag aag aca cca gag gtg act gat gcc				1877
Gly Asn Glu Ser Ser Pro Arg Glu Lys Thr Pro Glu Val Thr Asp Ala				
437	442	447	452	
act gag gaa ata gac aaa aat ttg gaa gaa act gga aga aga aaa ata				1925
Thr Glu Glu Ile Asp Lys Asn Leu Glu Glu Thr Gly Arg Arg Lys Ile				
453	458	463	468	
tcc cca agg gaa aat ggc cca gag gag gtc aag cct gta gat gaa atg				1973
Ser Pro Arg Glu Asn Gly Pro Glu Glu Val Lys Pro Val Asp Glu Met				
469	474	479	484	
gag aca gat ttg aac gca act gga aga gag agt tct cca agg gag aag				2021
Glu Thr Asp Leu Asn Ala Thr Gly Arg Glu Ser Ser Pro Arg Glu Lys				
485	490	495	500	
aca cca gag gtg att gat gct act gag gaa ata gat ttg gaa gaa act				2069
Thr Pro Glu Val Ile Asp Ala Thr Glu Glu Ile Asp Leu Glu Glu Thr				
501	506	511	516	
gaa aga gaa gta tcc cca cag gaa aat gga cta gag gag gtc aag cct				2117
Glu Arg Glu Val Ser Pro Gln Glu Asn Gly Leu Glu Glu Val Lys Pro				
517	522	527	532	
cta ggt gaa atg gag acg gat ttg aaa gca act gga aga gac agt ttc				2165
Leu Gly Glu Met Glu Thr Asp Leu Lys Ala Thr Gly Arg Asp Ser Phe				
533	538	543	548	
cca agg ggg aag aca cca gag gtg att gat gcc att gag gaa ata gag				2213
Pro Arg Gly Lys Thr Pro Glu Val Ile Asp Ala Ile Glu Glu Ile Glu				
549	554	559	564	
ata gat ttg gaa gaa act gaa aga gaa ata tcc cca cag gaa aat ggc				2261
Ile Asp Leu Glu Glu Thr Glu Arg Glu Ile Ser Pro Gln Glu Asn Gly				
565	570	575	580	
cta gag gag gtt aag cct cta ggt gaa atg caa aca gat ttg aaa gca				2309
Leu Glu Glu Val Lys Pro Leu Gly Glu Met Gln Thr Asp Leu Lys Ala				
581	586	591	596	
acc gga agg gag att tcc cca agg gag aag aca cca gag gtg att gat				2357
Thr Gly Arg Glu Ile Ser Pro Arg Glu Lys Thr Pro Glu Val Ile Asp				
597	602	607	612	
gcc act gag gaa ata gac aaa gat ctg gaa gaa act gga aga aga gaa				2405
Ala Thr Glu Glu Ile Asp Lys Asp Leu Glu Glu Thr Gly Arg Arg Glu				
613	618	623	628	

ata tcc cca gag gaa aat ggc cca gag gag gtc aag cct gta gat gaa	2453
Ile Ser Pro Glu Glu Asn Gly Pro Glu Glu Val Lys Pro Val Asp Glu	
629 634 639 644	
atg gag aca gac ttg aaa aca act gga aga gag ggt tcc tca agg gag	2501
Met Glu Thr Asp Leu Lys Thr Thr Gly Arg Glu Gly Ser Ser Arg Glu	
645 650 655 660	
aag aca cga gag gtg att gat gct gct gag gta ata gag aca gat ttg	2549
Lys Thr Arg Glu Val Ile Asp Ala Ala Glu Val Ile Glu Thr Asp Leu	
661 666 671 676	
gaa gaa act gaa aga gaa ata tcg cca cag gaa aat ggc cca gag gag	2597
Glu Glu Thr Glu Arg Glu Ile Ser Pro Gln Glu Asn Gly Pro Glu Glu	
677 682 687 692	
gtc aag cct gta ggt aaa atg gag aca gat ttg aaa gaa att aga gaa	2645
Val Lys Pro Val Gly Lys Met Glu Thr Asp Leu Lys Glu Ile Arg Glu	
693 698 703 708	
gaa att tcc caa agg gaa aag gtg cta gca gag ttc agt gct ata agg	2693
Glu Ile Ser Gln Arg Glu Lys Val Leu Ala Glu Phe Ser Ala Ile Arg	
709 714 719 724	
gaa aag gag att gat ttg aaa gaa act gga aaa aga gac att ccc atg	2741
Glu Lys Glu Ile Asp Leu Lys Glu Thr Gly Lys Arg Asp Ile Pro Met	
725 730 735 740	
atg gag aaa gta tca gga aag atg gct gtt gtt gaa gaa atg gag gca	2789
Met Glu Lys Val Ser Gly Lys Met Ala Val Val Glu Glu Met Glu Ala	
741 746 751 756	
gat ttg aaa gaa act gga aaa gaa aat ttt aga gag aga gga tct gaa	2837
Asp Leu Lys Glu Thr Gly Lys Glu Asn Phe Arg Glu Arg Gly Ser Glu	
757 762 767 772	
gag atc tgt gtt act gag gaa aag gtg gca gaa ttg aaa caa act gga	2885
Glu Ile Cys Val Thr Glu Glu Lys Val Ala Glu Leu Lys Gln Thr Gly	
773 778 783 788	
aaa aca gac att tct cca agg gaa aac gag cta gag gag acc agt acc	2933
Lys Thr Asp Ile Ser Pro Arg Glu Asn Glu Leu Glu Glu Thr Ser Thr	
789 794 799 804	
tca aga caa act gac aca cat tta atg cag agc ggt agc aat gac ttc	2981
Ser Arg Gln Thr Asp Thr His Leu Met Gln Ser Gly Ser Asn Asp Phe	
805 810 815 820	
agt gct atg cct tca cta gat att cag gta tgt att ttt ctg tcc ttt	3029
Ser Ala Met Pro Ser Leu Asp Ile Gln Val Cys Ile Phe Leu Ser Phe	
821 826 831 836	
aaa agt ttt ttg aat gct ttt tca gag gaa ata aat aat tcc atg att	3077
Lys Ser Phe Leu Asn Ala Phe Ser Glu Glu Ile Asn Asn Ser Met Ile	
837 842 847 852	

att ttg tcc tta agt cca aca aca ttt aaa aat ctc taa 3116  
 Ile Leu Ser Leu Ser Pro Thr Thr Phe Lys Asn Leu \*  
 853 858 863

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 <212> DNA  
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 <222> (57) .. (1193)

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 atg tcc aaa gaa cct ctc att ctc tgg ctg atg att gag ttt tgg tgg 104  
 Met Ser Lys Glu Pro Leu Ile Leu Trp Leu Met Ile Glu Phe Trp Trp  
 1 5 10 15  
 ctt tac ctg aca cca gtc act tca gag act gtt gtg acg gag gtt ttg 152  
 Leu Tyr Leu Thr Pro Val Thr Ser Glu Thr Val Val Thr Glu Val Leu  
 17 22 27 32  
 ggt cac cgg gtg act ttg ccc tgt ctg tac tca tcc tgg tct cac aac 200  
 Gly His Arg Val Thr Leu Pro Cys Leu Tyr Ser Ser Trp Ser His Asn  
 33 38 43 48  
 agc aac agc atg tgc tgg ggg aaa gac cag tgc ccc tac tcc ggt tgc 248  
 Ser Asn Ser Met Cys Trp Gly Lys Asp Gln Cys Pro Tyr Ser Gly Cys  
 49 54 59 64  
 aag gag gcg ctc atc cgc act gat gga atg agg gtg acc tca aga aag 296  
 Lys Glu Ala Leu Ile Arg Thr Asp Gly Met Arg Val Thr Ser Arg Lys  
 65 70 75 80  
 tca gca aaa tat aga ctt cag ggg act atc ccg aga ggt gat gtc tcc 344  
 Ser Ala Lys Tyr Arg Leu Gln Gly Thr Ile Pro Arg Gly Asp Val Ser  
 81 86 91 96  
 ttg acc atc tta aac ccc agt gaa agt gac agc ggt gtg tac tgc tgc 392  
 Leu Thr Ile Leu Asn Pro Ser Glu Ser Asp Ser Gly Val Tyr Cys Cys  
 97 102 107 112  
 cgc ata gaa gtg cct ggc tgg ttc aac gat gta aag ata aac gtg cgc 440  
 Arg Ile Glu Val Pro Gly Trp Phe Asn Asp Val Lys Ile Asn Val Arg  
 113 118 123 128  
 ctg aat cta cag aga gcc tca aca acc acg cac aga aca gca acc acc 488  
 Leu Asn Leu Gln Arg Ala Ser Thr Thr Thr His Arg Thr Ala Thr Thr  
 129 134 139 144  
 acc aca cgc aga aca aca aca aca agc ccc acc acc acc cga caa atg 536  
 Thr Thr Arg Arg Thr Thr Thr Thr Ser Pro Thr Thr Thr Arg Gln Met

550	555	560	
gat gtt cac ggc tca gtg ctg tcc ctg gcc tcc agt gcc tcc tcc acc			2085
Asp Val His Gly Ser Val Leu Ser Leu Ala Ser Ser Ala Ser Ser Thr			
565	570	575	
tac tcc tca caa atc cgg aag ctt cgt agg gaa ctg gaa tca tcc cag			2133
Tyr Ser Ser Gln Ile Arg Lys Leu Arg Arg Glu Leu Glu Ser Ser Gln			
580	585	590	
gaa aaa gtg gcc acc ttg acg tct cag ctt tct gcc aat gct aat ctg			2181
Glu Lys Val Ala Thr Leu Thr Ser Gln Leu Ser Ala Asn Ala Asn Leu			
595	600	605	610
gtg gct gct ttt gag cag agc ctg gtg aat atg aca tcc cgc ctg cga			2229
Val Ala Ala Phe Glu Gln Ser Leu Val Asn Met Thr Ser Arg Leu Arg			
615	620	625	
cac ctg gca gag acg gcc gag gag aag gac act gag ctg ctg gat ttg			2277
His Leu Ala Glu Thr Ala Glu Glu Lys Asp Thr Glu Leu Leu Asp Leu			
630	635	640	
cga gaa acc ata gac ttt ctg aag aaa aag aac tct gag gcc cag gca			2325
Arg Glu Thr Ile Asp Phe Leu Lys Lys Lys Asn Ser Glu Ala Gln Ala			
645	650	655	
gtc att cag gga gcc ctt aat gcc tca gaa acc aca ccc aaa ggt agg			2373
Val Ile Gln Gly Ala Leu Asn Ala Ser Glu Thr Thr Pro Lys Gly Arg			
660	665	670	
aca tcc agc cac aga ttg aga ggg aac agg gag cag gaa agt aag agt			2421
Thr Ser Ser His Arg Leu Arg Gly Asn Arg Glu Gln Glu Ser Lys Ser			
675	680	685	690
att aca gat ttt tat ctg ggc cca tag			2448
Ile Thr Asp Phe Tyr Leu Gly Pro			
695			

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 <212> DNA  
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<220>  
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atgtgtgaat attcatcagc atttgcttgt ggaacgctca cctctgcttt ttactcttgc	120

gattgaggat gggggcatga cactccagtg tcaaaataag tcttagtaga tttccttggt 1271  
tcataaaaaa gactcactta ttccatggat gtcattgatc caggcttgct ttagtttcat 1331  
gaatgaaggg tacttttagag accacaactt ctctgtcaaa aaaaaaaaaa 1380

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<220>  
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<222> (529)..(1308)

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gtggcggcag cgggttggtc tgccctctccg ccacctccac cgcggttat cccctggctg 180  
gcggcggttg cggggcgggg gacagtagtt gtagacgccc gccctgcct cagagaagat 240  
accacattga atgaacaaag actgaacttt gtttacagat accttttata aaagatgtct 300  
gtggagtagt gttacagttc aaataacaaa ggattttgca ttatgagatg agtgagagtg 360  
gagaattgga caaaaattga tttttgatct ctgaattgtg gtttttagct caccagttat 420  
tgtgtagtct cactatttga aaattcatgc tgaaaaactg agtgaatatg atcagatttc 480  
tccaccaa at tctcagcctg ataaggaaaa tcccgttttg tcaacctg atg aag cat 537  
Met Lys His  
1

tca aag aag aca tat gac tct ttt caa gat gaa ctt gaa gat tat att 585  
Ser Lys Lys Thr Tyr Asp Ser Phe Gln Asp Glu Leu Glu Asp Tyr Ile  
4 9 14 19

aaa gta cag aaa gcc aga ggc tta gag cca aag act tgt ttc aga aag 633  
Lys Val Gln Lys Ala Arg Gly Leu Glu Pro Lys Thr Cys Phe Arg Lys  
20 25 30 35

atg aaa ggg gac tat ttg gaa acc tgg ggg tac aaa gga gag gtt aat 681  
Met Lys Gly Asp Tyr Leu Glu Thr Trp Gly Tyr Lys Gly Glu Val Asn  
36 41 46 51

tcc aga ccc acg tat aga atg ttt gac cag aga ctc cca tct gaa acc 729  
Ser Arg Pro Thr Tyr Arg Met Phe Asp Gln Arg Leu Pro Ser Glu Thr  
52 57 62 67

atc cag acc tac cca aga tca tgc aat att cca caa aca gtg gaa aat 777

Ile	Gln	Thr	Tyr	Pro	Arg	Ser	Cys	Asn	Ile	Pro	Gln	Thr	Val	Glu	Asn		
68					73					78					83		
cgg	ttg	cct	cag	tgg	tta	cca	gcc	cat	gac	agc	aga	ttg	aga	cta	gac		825
Arg	Leu	Pro	Gln	Trp	Leu	Pro	Ala	His	Asp	Ser	Arg	Leu	Arg	Leu	Asp		
84					89					94					99		
tct	ctg	agc	tac	tgt	cag	ttc	acg	agg	gac	tgt	ttc	tca	gaa	aaa	cca		873
Ser	Leu	Ser	Tyr	Cys	Gln	Phe	Thr	Arg	Asp	Cys	Phe	Ser	Glu	Lys	Pro		
100					105					110					115		
gta	ccc	ctg	aac	ttt	aat	caa	caa	gaa	tat	att	tgt	ggc	tca	cat	ggt		921
Val	Pro	Leu	Asn	Phe	Asn	Gln	Gln	Glu	Tyr	Ile	Cys	Gly	Ser	His	Gly		
116					121					126					131		
gta	gaa	cat	aga	gtt	tac	aag	cac	ttc	tcc	tca	gat	aac	agt	acc	agt		969
Val	Glu	His	Arg	Val	Tyr	Lys	His	Phe	Ser	Ser	Asp	Asn	Ser	Thr	Ser		
132					137					142					147		
act	cat	caa	gcc	agt	cac	aaa	cag	ata	cat	cag	aag	agg	aaa	agg	cac		1017
Thr	His	Gln	Ala	Ser	His	Lys	Gln	Ile	His	Gln	Lys	Arg	Lys	Arg	His		
148					153					158					163		
cca	gag	gaa	ggc	aga	gaa	aaa	tca	gag	gag	gag	cgg	tct	aag	cat	aag		1065
Pro	Glu	Glu	Gly	Arg	Glu	Lys	Ser	Glu	Glu	Glu	Arg	Ser	Lys	His	Lys		
164					169					174					179		
aga	aaa	aaa	agc	tgc	gag	gaa	att	gac	tta	gac	aaa	cac	aag	agc	atc		1113
Arg	Lys	Lys	Ser	Cys	Glu	Glu	Ile	Asp	Leu	Asp	Lys	His	Lys	Ser	Ile		
180					185					190					195		
caa	aga	aag	aaa	aca	gag	gtg	gaa	ata	gaa	acc	gta	cat	gtc	agt	aca		1161
Gln	Arg	Lys	Lys	Thr	Glu	Val	Glu	Ile	Glu	Thr	Val	His	Val	Ser	Thr		
196					201					206					211		
gaa	aag	ctt	aag	aat	cga	aag	gag	aaa	aaa	agc	cga	gat	gta	gtc	tct		1209
Glu	Lys	Leu	Lys	Asn	Arg	Lys	Glu	Lys	Lys	Ser	Arg	Asp	Val	Val	Ser		
212					217					222					227		
aag	aaa	gag	gaa	cgt	aag	cgt	aca	aaa	aag	aaa	aag	gaa	caa	ggc	caa		1257
Lys	Lys	Glu	Glu	Arg	Lys	Arg	Thr	Lys	Lys	Lys	Lys	Glu	Gln	Gly	Gln		
228					233					238					243		
gaa	agg	aca	gag	gag	gaa	atg	ctt	tgg	gac	cag	tct	att	ctt	gga	ttt		1305
Glu	Arg	Thr	Glu	Glu	Glu	Met	Leu	Trp	Asp	Gln	Ser	Ile	Leu	Gly	Phe		
244					249					254					259		
tga	agct	ttcaa	agttg	gttct	cccaa	agttaa	attg	aaaaa	atagg	tgagag	cttg						1362
*																	
260																	
gttttatgat	atccgtgttc	ataccacttt	tcttatgtga	ataggttctt	taacttctaa												1422
caaaggccta	gtaaacaaag	tgtttagcat	gcttgctctc	caacacagaa	attgcttttc												1482
ctcattttct	aaaagcatta	ttacattttt	tgaacatata	gtgtaatttc	ctttaatgaa												1542

agtgactctg cttttattca tcaaattgct ttgatgggtg aaatattttc tgttgggagg 1602  
 ttatttattt taaattggag gattaatgac ctttgcacaa tctgtttctt gattgggttt 1662  
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 tctcctttat tagatctaac ttgcag 1748

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 <212> DNA  
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 <222> (123)..(2291)

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 cc atg gag ggc tca cgt ccc cgc gcc ccg agc ggc cac tta gcg ccg 167  
 Met Glu Gly Ser Arg Pro Arg Ala Pro Ser Gly His Leu Ala Pro  
 1 5 10  
 tcg ccg ccg gct ttc gac ggc gag ctg gat ctg cag cga tac tcc aac 215  
 Ser Pro Pro Ala Phe Asp Gly Glu Leu Asp Leu Gln Arg Tyr Ser Asn  
 16 21 26 31  
 ggg cca gcc gtg agc gca ggg tcg ctc ggg atg gga gcg gtg agc tgg 263  
 Gly Pro Ala Val Ser Ala Gly Ser Leu Gly Met Gly Ala Val Ser Trp  
 32 37 42 47  
 tct gag agt cgt gca ggc gaa cgg cgc ttc ccc tgc cct gta tgc ggg 311  
 Ser Glu Ser Arg Ala Gly Glu Arg Arg Phe Pro Cys Pro Val Cys Gly  
 48 53 58 63  
 aag cgc ttc cgc ttc aac tct atc ctt gct ttg cac ctg cgg gcg cac 359  
 Lys Arg Phe Arg Phe Asn Ser Ile Leu Ala Leu His Leu Arg Ala His  
 64 69 74 79  
 cca gga gcc cag gcc ttc cag tgc cct cac tgc ggc cac cgc gcg gcg 407  
 Pro Gly Ala Gln Ala Phe Gln Cys Pro His Cys Gly His Arg Ala Ala  
 80 85 90 95  
 cag cgg gct ctg ctg cgc tcg cac ctg cgc aca cac cag ccc gag cgc 455  
 Gln Arg Ala Leu Leu Arg Ser His Leu Arg Thr His Gln Pro Glu Arg  
 96 101 106 111  
 cca cgt agt cct gct gca cgc ctg ttg ctg gag ttg gaa gag cgc gcg 503  
 Pro Arg Ser Pro Ala Ala Arg Leu Leu Leu Glu Leu Glu Glu Arg Ala  
 112 117 122 127

cta cta cgc gag gcc cga ctg ggg aga gcc cga agc tca ggg ggc atg	551
Leu Leu Arg Glu Ala Arg Leu Gly Arg Ala Arg Ser Ser Gly Gly Met	
128 133 138 143	
cag gcc acc cct gcc act gag ggt ctg gcg cgg ccc cag gct cct tca	599
Gln Ala Thr Pro Ala Thr Glu Gly Leu Ala Arg Pro Gln Ala Pro Ser	
144 149 154 159	
tgc tcc gcc ttc cgt tgc ccc tac tgc aaa ggc aag ttt cgc acc tcg	647
Ser Ser Ala Phe Arg Cys Pro Tyr Cys Lys Gly Lys Phe Arg Thr Ser	
160 165 170 175	
gcg gag cgc gaa cgc cac ctg cac atc ctg cat agg ccc tgg aag tgc	695
Ala Glu Arg Glu Arg His Leu His Ile Leu His Arg Pro Trp Lys Cys	
176 181 186 191	
ggc ctg tgc agt ttc ggc tcc agc cag gag gag gag ctg ctg cac cac	743
Gly Leu Cys Ser Phe Gly Ser Ser Gln Glu Glu Glu Leu Leu His His	
192 197 202 207	
agc ctg acg gcc cac ggg gct ccc gag cgt ccc ctg gcg gcc acc tcc	791
Ser Leu Thr Ala His Gly Ala Pro Glu Arg Pro Leu Ala Ala Thr Ser	
208 213 218 223	
gct gcg cct ccg cct cag cct cag cct cag cct cca ccc cag ccc gaa	839
Ala Ala Pro Pro Pro Gln Pro Gln Pro Gln Pro Pro Pro Gln Pro Glu	
224 229 234 239	
ccc aga tca gtc ccc cag ccg gag ccg gag ccg gag ccc gaa cgt gag	887
Pro Arg Ser Val Pro Gln Pro Glu Pro Glu Pro Glu Pro Glu Arg Glu	
240 245 250 255	
gca acc ccg acc cca gct cct gcc gct ccc gag gag ccc cca gcg cct	935
Ala Thr Pro Thr Pro Ala Pro Ala Ala Pro Glu Glu Pro Pro Ala Pro	
256 261 266 271	
ccg gag ttc cgc tgc caa gtg tgc ggc cag agc ttt aca cag tct tgg	983
Pro Glu Phe Arg Cys Gln Val Cys Gly Gln Ser Phe Thr Gln Ser Trp	
272 277 282 287	
ttt ctc aag ggc cac atg cgt aag cac aag gcc tcc ttc gat cat gcg	1031
Phe Leu Lys Gly His Met Arg Lys His Lys Ala Ser Phe Asp His Ala	
288 293 298 303	
tgt ccg gtg tgc ggc cgc tgc ttc aag gag ccc tgg ttc ctt aag aac	1079
Cys Pro Val Cys Gly Arg Cys Phe Lys Glu Pro Trp Phe Leu Lys Asn	
304 309 314 319	
cac atg aag gtg cac gcc agc aag ctg gcg cca ctg cgt gcc ccg ggg	1127
His Met Lys Val His Ala Ser Lys Leu Gly Pro Leu Arg Ala Pro Gly	
320 325 330 335	
cct gcc tcc ggg cct gcc cgc gcc ccc cag cct cct gac ctc ggc ctg	1175
Pro Ala Ser Gly Pro Ala Arg Ala Pro Gln Pro Pro Asp Leu Gly Leu	
336 341 346 351	
ctg gcc tat gag ccg ttg ggc cca gcg ctc ctc ttg gcc ccg gct ccc	1223



Leu	Ala	Tyr	Glu	Pro	Leu	Gly	Pro	Ala	Leu	Leu	Leu	Ala	Pro	Ala	Pro		
352					357					362					367		
acc	ccg	gcc	gag	cgc	cgt	gag	ccc	ccg	agc	ctc	ttg	ggc	tac	ctg	agc	1271	
Thr	Pro	Ala	Glu	Arg	Arg	Glu	Pro	Pro	Ser	Leu	Leu	Gly	Tyr	Leu	Ser		
368					373					378					383		
ctg	cga	gct	ggc	gag	ggc	cgg	ccc	aac	ggc	gag	ggg	gct	gag	ccc	ggg	1319	
Leu	Arg	Ala	Gly	Glu	Gly	Arg	Pro	Asn	Gly	Glu	Gly	Ala	Glu	Pro	Gly		
384					389					394					399		
ccc	ggc	cgc	agc	ttc	gga	ggc	ttc	cgc	ccg	ctg	tcc	tct	gct	ctc	ccg	1367	
Pro	Gly	Arg	Ser	Phe	Gly	Gly	Phe	Arg	Pro	Leu	Ser	Ser	Ala	Leu	Pro		
400					405					410					415		
gcc	cgg	gct	cgc	cgg	cac	cgt	gcg	gag	gag	cct	gag	gaa	gaa	gag	gag	1415	
Ala	Arg	Ala	Arg	Arg	His	Arg	Ala	Glu	Glu	Pro	Glu	Glu	Glu	Glu	Glu		
416					421					426					431		
gtg	gtg	gag	gcc	cag	gag	gaa	acc	tgg	gcc	cgg	ggc	agg	tcg	ctg	ggc	1463	
Val	Val	Glu	Ala	Gln	Glu	Glu	Thr	Trp	Ala	Arg	Gly	Arg	Ser	Leu	Gly		
432					437					442					447		
tct	ctg	gct	tcc	ctg	cac	ccg	cgc	ccg	ggg	gag	gga	ccg	ggg	cac	tct	1511	
Ser	Leu	Ala	Ser	Leu	His	Pro	Arg	Pro	Gly	Glu	Gly	Pro	Gly	His	Ser		
448					453					458					463		
gcc	tct	gct	gct	ggg	gcc	cag	gca	aga	tcg	acc	gcc	acg	cag	gaa	gag	1559	
Ala	Ser	Ala	Ala	Gly	Ala	Gln	Ala	Arg	Ser	Thr	Ala	Thr	Gln	Glu	Glu		
464					469					474					479		
aat	ggg	ctg	ttg	gtt	gga	ggg	acc	cgg	cct	gaa	ggg	ggc	cgg	ggc	gcc	1607	
Asn	Gly	Leu	Leu	Val	Gly	Gly	Thr	Arg	Pro	Glu	Gly	Gly	Arg	Gly	Ala		
480					485					490					495		
acc	ggc	aag	gat	tgt	cct	ttc	tgc	gga	aaa	tct	ttc	cgc	tca	gca	cat	1655	
Thr	Gly	Lys	Asp	Cys	Pro	Phe	Cys	Gly	Lys	Ser	Phe	Arg	Ser	Ala	His		
496					501					506					511		
cac	ctc	aaa	gtg	cat	ctg	cga	gtg	cac	aca	ggc	gag	cgg	ccc	tac	aag	1703	
His	Leu	Lys	Val	His	Leu	Arg	Val	His	Thr	Gly	Glu	Arg	Pro	Tyr	Lys		
512					517					522					527		
tgt	ccg	cac	tgc	gac	tac	gcg	ggc	acc	cag	tcc	ggc	tcg	ctc	aag	tat	1751	
Cys	Pro	His	Cys	Asp	Tyr	Ala	Gly	Thr	Gln	Ser	Gly	Ser	Leu	Lys	Tyr		
528					533					538					543		
cac	cta	cag	cgc	cac	cac	cgg	gag	cag	agg	agc	ggg	gcc	ggc	ccc	ggg	1799	
His	Leu	Gln	Arg	His	His	Arg	Glu	Gln	Arg	Ser	Gly	Ala	Gly	Pro	Gly		
544					549					554					559		
cca	ccc	ccg	gag	cca	ccg	cct	cct	tcc	cag	cgg	ggg	tcg	gcc	ccg	caa	1847	
Pro	Pro	Pro	Glu	Pro	Pro	Pro	Pro	Ser	Gln	Arg	Gly	Ser	Ala	Pro	Gln		
560					565					570					575		
tct	gga	gcc	aag	ccg	tct	ccg	cag	cct	gcg	acc	tgg	gtg	gag	ggc	gcc	1895	
Ser	Gly	Ala	Lys	Pro	Ser	Pro	Gln	Pro	Ala	Thr	Trp	Val	Glu	Gly	Ala		

576	581	586	591	
tca agt ccc cgg cct cct tct agc ggt gct ggg ccg ggg tcc cgt cgg				1943
Ser Ser Pro Arg Pro Pro Ser Ser Gly Ala Gly Pro Gly Ser Arg Arg				
592	597	602	607	
aag ccc gcc agc cct ggg agg acc ctg cgc aac ggg cga ggc ggt gag				1991
Lys Pro Ala Ser Pro Gly Arg Thr Leu Arg Asn Gly Arg Gly Gly Glu				
608	613	618	623	
gcc gaa ccc ctg gac ctg tcc ttg cgg gca ggg ccg gga ggc gag gcc				2039
Ala Glu Pro Leu Asp Leu Ser Leu Arg Ala Gly Pro Gly Gly Glu Ala				
624	629	634	639	
ggg cct ggg ggt gcc ctc cac cgc tgc ctc ttc tgc ccg ttc gcc act				2087
Gly Pro Gly Gly Ala Leu His Arg Cys Leu Phe Cys Pro Phe Ala Thr				
640	645	650	655	
gga gcc cca gag ctc atg gcc ttg cac ctt caa gtg cac cac agc cgc				2135
Gly Ala Pro Glu Leu Met Ala Leu His Leu Gln Val His His Ser Arg				
656	661	666	671	
cgg gct agg ggc cgc cgg cca ccc cag gct gac gcg tcc ccg ccc tat				2183
Arg Ala Arg Gly Arg Arg Pro Pro Gln Ala Asp Ala Ser Pro Pro Tyr				
672	677	682	687	
gcc cga gta cca tca gga gag acc cct ccc agt cct tcg cag gaa ggg				2231
Ala Arg Val Pro Ser Gly Glu Thr Pro Pro Ser Pro Ser Gln Glu Gly				
688	693	698	703	
gag gag ggc tcc ggg ctg tcc aga ccc gga gag gca ggg ctg ggg ggg				2279
Glu Glu Gly Ser Gly Leu Ser Arg Pro Gly Glu Ala Gly Leu Gly Gly				
704	709	714	719	
caa gaa cgg tag tgg gccctcaggg gcgattagct tagtgagctt accccgccgg				2334
Gln Glu Arg *				
720				
agcggggggag cgctagaggt agttgggtag agaagccagc aggggggcagc gtgggaccca				2394
tatcccagcc ccaggcggac cagaggtgga aggcgcggcg ggcgtaggag ggtgggctgg				2454
cggtacccac ccagcccaag ggagtcacag tgccttagaa gtggcagagg tgagggtcaa				2514
agaacgggggt ccctgggctg gcagagaagg tttgtgtccc tggtgaggag ccactctgcc				2574
agtctttgct ggtccatagg cgtgagagtt tatttttgta caaggggtga ggggtgggggg				2634
cactgtaccc ttctagcccc atcagggggc ctgtagacgt cgctattttt ggtacgattc				2694
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aaaaaaaaa a				2765

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<400> 62

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                               Met Ala Trp Thr Ala Leu Leu Leu
                               1           5

agc ctc ctt gct cac ttt aca ggt tct gtg gcc tcc tac gag gtg act      100
Ser Leu Leu Ala His Phe Thr Gly Ser Val Ala Ser Tyr Glu Val Thr
  9                   14                   19                   24

cag tca ctc tca gtg tca gtg gcc ctg gga cag acg gcc agg att acc      148
Gln Ser Leu Ser Val Ser Val Ala Leu Gly Gln Thr Ala Arg Ile Thr
 25                   30                   35                   40

tgt ggg gga gac aac att gga agt aaa aat gta cac tgg tac caa cag      196
Cys Gly Gly Asp Asn Ile Gly Ser Lys Asn Val His Trp Tyr Gln Gln
 41                   46                   51                   56

aag cca ggc cag gcc cct gta ttg gtc atc tat agg gat acc aac cgg      244
Lys Pro Gly Gln Ala Pro Val Leu Val Ile Tyr Arg Asp Thr Asn Arg
 57                   62                   67                   72

ccc cct ggg atc cct gag cga ttc tct ggc tcc aac tcg ggg aac acg      292
Pro Pro Gly Ile Pro Glu Arg Phe Ser Gly Ser Asn Ser Gly Asn Thr
 73                   78                   83                   88

gcc acc ctg acc atc agc aga gcc caa gcc ggg gat gag gct gac tat      340
Ala Thr Leu Thr Ile Ser Arg Ala Gln Ala Gly Asp Glu Ala Asp Tyr
 89                   94                   99                   104

ttc tgt cag gtg tgg gac agt agc gcg tat gtg gtt ttc ggc gga ggg      388
Phe Cys Gln Val Trp Asp Ser Ser Ala Tyr Val Val Phe Gly Gly Gly
105                   110                   115                   120

acc cag ctg acc gtc ctc ggt cag ccc aag gct gcc ccc tcg gtc act      436
Thr Gln Leu Thr Val Leu Gly Gln Pro Lys Ala Ala Pro Ser Val Thr
121                   126                   131                   136

ctg ttc cca ccc tcc tct gag gag ctt caa gcc aac aag gcc aca ctg      484
Leu Phe Pro Pro Ser Ser Glu Glu Leu Gln Ala Asn Lys Ala Thr Leu
137                   142                   147                   152

gtg tgt ctc ata agt gat ttt tac ccg gga gcc ggg aca gtg gcc tgg      532
Val Cys Leu Ile Ser Asp Phe Tyr Pro Gly Ala Gly Thr Val Ala Trp
153                   158                   163                   168

aag gca aaa aga agc ccc gtc aag gcg gga agg gga aac aac caa acc      580
Lys Ala Lys Arg Ser Pro Val Lys Ala Gly Arg Gly Asn Asn Gln Thr
169                   174                   179                   184
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ttt caa aaa aag gaa aga aca agg acc gcg ggc agc cat ctt acc tgg	628
Phe Gln Lys Lys Glu Arg Thr Arg Thr Ala Gly Ser His Leu Thr Trp	
185                      190                      195                      200	
acc ccg acc ccc tga gccaggggac agccccacta aaacacttcc ggttccctcg	683
Thr Pro Thr Pro *	
201	
tttccccctt gaaagtgttc ccccggggta aaaaaacctg ggccccctta caaaaaaggt	743
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tc	805

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gctctggtgg atgagaggag ctagccttga aaaacttgat actgatggac attgtgtggg	120
ccagaggcag gg      atg gtt ggc tat gac ccc aaa cca gat ggc agg aat	168
Met Val Gly Tyr Asp Pro Lys Pro Asp Gly Arg Asn	
1                      5                      10	
aac acc aag ttc cag gtg gca gtg gct ggg tct gtg tct gga ctt gtt	216
Asn Thr Lys Phe Gln Val Ala Val Ala Gly Ser Val Ser Gly Leu Val	
13                      18                      23                      28	
act cgg gcg ctg atc agt ccc ttc gac gtc atc aag atc cgt ttc cag	264
Thr Arg Ala Leu Ile Ser Pro Phe Asp Val Ile Lys Ile Arg Phe Gln	
29                      34                      39                      44	
ctt cag cat gag cgc ctg tct cgc agt gac ccc agc gca aag tac cat	312
Leu Gln His Glu Arg Leu Ser Arg Ser Asp Pro Ser Ala Lys Tyr His	
45                      50                      55                      60	
ggc atc ctc cag ggc tct agg cag att ctg cag gag gag ggt ccg aca	360
Gly Ile Leu Gln Gly Ser Arg Gln Ile Leu Gln Glu Glu Gly Pro Thr	
61                      66                      71                      76	
gct ttc tgg aaa gga cac gtc cca gct cag att ctc tcc ata ggc tat	408
Ala Phe Trp Lys Gly His Val Pro Ala Gln Ile Leu Ser Ile Gly Tyr	
77                      82                      87                      92	
gga gct gtc caa ttc ttg tca ttt gaa atg ctg acg gag ctg gtc cac	456

Gly	Ala	Val	Gln	Phe	Leu	Ser	Phe	Glu	Met	Leu	Thr	Glu	Leu	Val	His	
93					98					103					108	
aga	ggc	agc	gtg	tac	gac	gcc	cgg	gaa	ttc	tca	gtg	cac	ttt	gta	tgt	504
Arg	Gly	Ser	Val	Tyr	Asp	Ala	Arg	Glu	Phe	Ser	Val	His	Phe	Val	Cys	
109					114					119					124	
ggt	ggc	ctg	gct	gcc	tgt	atg	gcc	acc	ctc	act	gtg	cac	ccc	gtg	gat	552
Gly	Gly	Leu	Ala	Ala	Cys	Met	Ala	Thr	Leu	Thr	Val	His	Pro	Val	Asp	
125					130					135					140	
gtt	ctg	cgc	acc	cgc	ttt	gca	gct	cag	ggt	gag	ccc	aag	gtc	tat	aat	600
Val	Leu	Arg	Thr	Arg	Phe	Ala	Ala	Gln	Gly	Glu	Pro	Lys	Val	Tyr	Asn	
141					146					151					156	
acg	ctg	cgc	cac	gcc	gtg	ggg	acc	atg	tat	agg	agc	gaa	ggc	ccc	cag	648
Thr	Leu	Arg	His	Ala	Val	Gly	Thr	Met	Tyr	Arg	Ser	Glu	Gly	Pro	Gln	
157					162					167					172	
gtt	ttc	tac	aaa	ggc	ttg	gct	ccc	acc	ttg	atc	gcc	atc	ttc	ccc	tac	696
Val	Phe	Tyr	Lys	Gly	Leu	Ala	Pro	Thr	Leu	Ile	Ala	Ile	Phe	Pro	Tyr	
173					178					183					188	
gcc	ggg	ctg	cag	ttc	tct	tgc	tac	agc	tcc	ttg	aag	cac	ctg	tac	aag	744
Ala	Gly	Leu	Gln	Phe	Ser	Cys	Tyr	Ser	Ser	Leu	Lys	His	Leu	Tyr	Lys	
189					194					199					204	
tgg	gcc	ata	cca	gcc	gaa	gga	aag	aaa	aat	gag	aac	ctc	caa	aac	ctg	792
Trp	Ala	Ile	Pro	Ala	Glu	Gly	Lys	Lys	Asn	Glu	Asn	Leu	Gln	Asn	Leu	
205					210					215					220	
ctt	tgt	ggc	agt	gga	gct	ggt	gtc	atc	agc	aag	acc	ctg	aca	tat	ccg	840
Leu	Cys	Gly	Ser	Gly	Ala	Gly	Val	Ile	Ser	Lys	Thr	Leu	Thr	Tyr	Pro	
221					226					231					236	
ctg	gac	ctc	ttc	aag	aag	cgg	cta	cag	gtt	gga	ggg	ttt	gag	cat	gcc	888
Leu	Asp	Leu	Phe	Lys	Lys	Arg	Leu	Gln	Val	Gly	Gly	Phe	Glu	His	Ala	
237					242					247					252	
aga	gct	gcc	ttt	ggc	cag	gta	cgg	aga	tac	aag	ggc	ctc	atg	gac	tgt	936
Arg	Ala	Ala	Phe	Gly	Gln	Val	Arg	Arg	Tyr	Lys	Gly	Leu	Met	Asp	Cys	
253					258					263					268	
gcc	aag	cag	gtg	ctg	caa	aag	gaa	ggc	gcc	ctg	ggc	ttc	ttc	aag	ggc	984
Ala	Lys	Gln	Val	Leu	Gln	Lys	Glu	Gly	Ala	Leu	Gly	Phe	Phe	Lys	Gly	
269					274					279					284	
ctg	tcc	ccc	agc	ttg	ctg	aag	gct	gcc	ctc	tcc	aca	ggc	ttc	atg	ttc	1032
Leu	Ser	Pro	Ser	Leu	Leu	Lys	Ala	Ala	Leu	Ser	Thr	Gly	Phe	Met	Phe	
285					290					295					300	
ttc	tcg	tat	gaa	ttc	ttc	tgt	aat	gtc	ttc	cac	tgc	atg	aac	agg	aca	1080
Phe	Ser	Tyr	Glu	Phe	Phe	Cys	Asn	Val	Phe	His	Cys	Met	Asn	Arg	Thr	
301					306					311					316	
gcc	agc	cag	cgc	tga	gcg	caggaag	gaccccaggt	cttccttga	ggcagcctcc							1135
Ala	Ser	Gln	Arg	*												

317

tgaaggaagg aagattcagt ctccactgag aggtgccgtc tggcccttcc ctgcaggcca 1195  
 gctgccccaa gcggggtagc agccttgaac ccaccagct gggacaccac cagaaggctcc 1255  
 agggctctcc ccatgagaga atcagagggga atgcaggacg tggcttatgg tgagccaacg 1315  
 acacagtgag aaggagcagg aagttgctgt ttctcctctg accagcccac actccaaagg 1375  
 aaacagacgc catctacac ctatcagccc tgctgccag gagaacagaa cacactcctg 1435  
 gtctggatgg ggctgctgct tgagtgcaga gggctgcggg aggccctttg caggagtcag 1495  
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 aaaaaaaaaa a 1566

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 <212> DNA  
 <213> Homo sapiens

<220>  
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 <222> (352)..(2448)

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 atcagtagtg gactcagcga tgcctcagac aatctcagtt cagaagaatt caatgccagc 180  
 tctcactca actccctccc aagtactccc actgcttctc gcaggaactc aacaatagtg 240  
 ctacgcacag actcatagaa gcgctcactg gcagaaagtg ggctgagctg gtttagtgaa 300  
 tcagaggaga aagcccctaa aaaactggag tacgacagtg gtagcctgaa g atg gaa 357  
 Met Glu  
 1

cct ggg act tct aag tgg cgg agg gag cgg cct gag agc tgt gat gat 405  
 Pro Gly Thr Ser Lys Trp Arg Arg Glu Arg Pro Glu Ser Cys Asp Asp  
 3 8 13 18

tca tcc aag ggt gga gaa ctg aaa aag ccc atc agc ctg ggc cac cct 453  
 Ser Ser Lys Gly Gly Glu Leu Lys Lys Pro Ile Ser Leu Gly His Pro  
 19 24 29 34

ggg tcc ctg aag aag ggc aag acc cca cct gtg gct gta act tcc ccc 501  
 Gly Ser Leu Lys Lys Gly Lys Thr Pro Pro Val Ala Val Thr Ser Pro  
 35 40 45 50

atc act cac aca gcc cag agt gcc ctc aaa gtc gca ggc aaa cct gag	549
Ile Thr His Thr Ala Gln Ser Ala Leu Lys Val Ala Gly Lys Pro Glu	
51 56 61 66	
ggc aaa gct aca gac aag ggt aag ctt gca gtg aag aat act ggg ctc	597
Gly Lys Ala Thr Asp Lys Gly Lys Leu Ala Val Lys Asn Thr Gly Leu	
67 72 77 82	
caa cgc tcc tcc tct gat gct ggt cgg gac cgc ctg agt gat gct aag	645
Gln Arg Ser Ser Ser Asp Ala Gly Arg Asp Arg Leu Ser Asp Ala Lys	
83 88 93 98	
aag ccc ccc tcg ggc att gct cgc ccc tcc act tcg gga tcc ttt ggc	693
Lys Pro Pro Ser Gly Ile Ala Arg Pro Ser Thr Ser Gly Ser Phe Gly	
99 104 109 114	
tac aag aag cct cct cct gcc aca ggc aca gcc act gtc atg caa act	741
Tyr Lys Lys Pro Pro Pro Ala Thr Gly Thr Ala Thr Val Met Gln Thr	
115 120 125 130	
ggg ggt tca gcc act ctc agc aag atc cag aag tcc tca ggc atc cct	789
Gly Gly Ser Ala Thr Leu Ser Lys Ile Gln Lys Ser Ser Gly Ile Pro	
131 136 141 146	
gtc aag cca gta aat ggg cgc aag act agc tta gat gtt tcc aac agt	837
Val Lys Pro Val Asn Gly Arg Lys Thr Ser Leu Asp Val Ser Asn Ser	
147 152 157 162	
gca gag cca gga ttc ctg gct cct gga gcc cgt tct aac atc cag tac	885
Ala Glu Pro Gly Phe Leu Ala Pro Gly Ala Arg Ser Asn Ile Gln Tyr	
163 168 173 178	
cgc agc ctg ccc cgg cca gcc aag tca agt tct atg agc gtg acc ggc	933
Arg Ser Leu Pro Arg Pro Ala Lys Ser Ser Ser Met Ser Val Thr Gly	
179 184 189 194	
ggg cgg ggt gga cct cgc cct gtg agc agc agc att gac ccc agt ctc	981
Gly Arg Gly Gly Pro Arg Pro Val Ser Ser Ser Ile Asp Pro Ser Leu	
195 200 205 210	
ctc agc acc aag cag gga ggc ctt acg cct tcc aga ctg aag gag cct	1029
Leu Ser Thr Lys Gln Gly Gly Leu Thr Pro Ser Arg Leu Lys Glu Pro	
211 216 221 226	
acc aag gta gcc agt ggg cgg acc act cca gcc cct gtc aat cag aca	1077
Thr Lys Val Ala Ser Gly Arg Thr Thr Pro Ala Pro Val Asn Gln Thr	
227 232 237 242	
gat cgg gaa aag gag aag gcc aaa gcc aag gca gtg gcc ttg gac tca	1125
Asp Arg Glu Lys Glu Lys Ala Lys Ala Lys Ala Val Ala Leu Asp Ser	
243 248 253 258	
gac aac atc tcc ttg aag agt att ggc tcc cca gaa agt act ccc aag	1173
Asp Asn Ile Ser Leu Lys Ser Ile Gly Ser Pro Glu Ser Thr Pro Lys	
259 264 269 274	
aac caa gca agc cac ccc aca gcc acc aag ctg gca gag ctg cca cca	1221

Asn Gln Ala Ser His Pro Thr Ala Thr Lys Leu Ala Glu Leu Pro Pro	
275 280 285 290	
acc cct ctc agg gcc aca gcg aag agc ttt gtc aaa cca ccc tca cta	1269
Thr Pro Leu Arg Ala Thr Ala Lys Ser Phe Val Lys Pro Pro Ser Leu	
291 296 301 306	
gcc aat ctt gac aag gtc aac tcc aac agt ctg gat cta cca tca tcc	1317
Ala Asn Leu Asp Lys Val Asn Ser Asn Ser Leu Asp Leu Pro Ser Ser	
307 312 317 322	
agt gat acc acc cat gct tca aag gtc cca gat ctg cat gct aca agc	1365
Ser Asp Thr Thr His Ala Ser Lys Val Pro Asp Leu His Ala Thr Ser	
323 328 333 338	
tca gca tct ggg ggc cct ctc cct tcc tgc ttc acc ccc agt ccg gca	1413
Ser Ala Ser Gly Gly Pro Leu Pro Ser Cys Phe Thr Pro Ser Pro Ala	
339 344 349 354	
ccc atc ctc aat att aac tca gcc agc ttc tcc cag ggc ctg gag cta	1461
Pro Ile Leu Asn Ile Asn Ser Ala Ser Phe Ser Gln Gly Leu Glu Leu	
355 360 365 370	
atg agt ggt ttc agt gtg cca aaa gag acc cgc atg tac ccc aaa ctc	1509
Met Ser Gly Phe Ser Val Pro Lys Glu Thr Arg Met Tyr Pro Lys Leu	
371 376 381 386	
tca ggc ctg cac agg agc atg gag tcc ctc cag atg cca atg agc ctc	1557
Ser Gly Leu His Arg Ser Met Glu Ser Leu Gln Met Pro Met Ser Leu	
387 392 397 402	
ccc agt gcc ttc ccc agc agt act ccc gtc ccc acc cca cct gct ccc	1605
Pro Ser Ala Phe Pro Ser Ser Thr Pro Val Pro Thr Pro Pro Ala Pro	
403 408 413 418	
cct gct gct ccc aca gaa gaa gag acg gaa gag ctg act tgg agt gga	1653
Pro Ala Ala Pro Thr Glu Glu Glu Thr Glu Glu Leu Thr Trp Ser Gly	
419 424 429 434	
agc ccc aga gct ggg caa ctg gac agt aat cag cgg gat cgg aac act	1701
Ser Pro Arg Ala Gly Gln Leu Asp Ser Asn Gln Arg Asp Arg Asn Thr	
435 440 445 450	
ctt ccc aag aaa ggg ctc agg tac cag ctt cag tcc cag gag gag acc	1749
Leu Pro Lys Lys Gly Leu Arg Tyr Gln Leu Gln Ser Gln Glu Glu Thr	
451 456 461 466	
aag gag agg cga cat tcc cat acc att ggt ggg ctg cct gaa tcc gat	1797
Lys Glu Arg Arg His Ser His Thr Ile Gly Gly Leu Pro Glu Ser Asp	
467 472 477 482	
gac cag tca gag ctg cct tct ccc cct gca ctt ccc atg tct ctg agt	1845
Asp Gln Ser Glu Leu Pro Ser Pro Pro Ala Leu Pro Met Ser Leu Ser	
483 488 493 498	
gca aag ggc caa ctt acc aac ata gtg agt ccc act gcg gcc acc acg	1893
Ala Lys Gly Gln Leu Thr Asn Ile Val Ser Pro Thr Ala Ala Thr Thr	



499	504	509	514	
cca aga atc acc cgc tcc aac agc atc ccc acc cac gag gcg gcc ttc				1941
Pro Arg Ile Thr Arg Ser Asn Ser Ile Pro Thr His Glu Ala Ala Phe				
515	520	525	530	
gag ctg tac agc ggc tcc caa atg ggg agc acc ctg tcc ctg gcc gag				1989
Glu Leu Tyr Ser Gly Ser Gln Met Gly Ser Thr Leu Ser Leu Ala Glu				
531	536	541	546	
aga ccc aag gga atg att cgg tca gga tcc ttc cga gac ccc acg gac				2037
Arg Pro Lys Gly Met Ile Arg Ser Gly Ser Phe Arg Asp Pro Thr Asp				
547	552	557	562	
gat gtt cac ggc tca gtg ctg tcc ctg gcc tcc agt gcc tcc tcc acc				2085
Asp Val His Gly Ser Val Leu Ser Leu Ala Ser Ser Ala Ser Ser Thr				
563	568	573	578	
tac tcc tca caa atc cgg aag ctt cgt agg gaa ctg gaa tca tcc cag				2133
Tyr Ser Ser Gln Ile Arg Lys Leu Arg Arg Glu Leu Glu Ser Ser Gln				
579	584	589	594	
gaa aaa gtg gcc acc ttg acg tct cag ctt tct gcc aat gct aat ctg				2181
Glu Lys Val Ala Thr Leu Thr Ser Gln Leu Ser Ala Asn Ala Asn Leu				
595	600	605	610	
gtg gct gct ttt gag cag agc ctg gtg aat atg aca tcc cgc ctg cga				2229
Val Ala Ala Phe Glu Gln Ser Leu Val Asn Met Thr Ser Arg Leu Arg				
611	616	621	626	
cac ctg gca gag acg gcc gag gag aag gac act gag ctg ctg gat ttg				2277
His Leu Ala Glu Thr Ala Glu Glu Lys Asp Thr Glu Leu Leu Asp Leu				
627	632	637	642	
cga gaa acc ata gac ttt ctg aag aaa aag aac tct gag gcc cag gca				2325
Arg Glu Thr Ile Asp Phe Leu Lys Lys Lys Asn Ser Glu Ala Gln Ala				
643	648	653	658	
gtc att cag gga gcc ctt aat gcc tca gaa acc aca ccc aaa ggt agg				2373
Val Ile Gln Gly Ala Leu Asn Ala Ser Glu Thr Thr Pro Lys Gly Arg				
659	664	669	674	
aca tcc agc cac aga ttg aga ggg aac agg gag cag gaa agt aag agt				2421
Thr Ser Ser His Arg Leu Arg Gly Asn Arg Glu Gln Glu Ser Lys Ser				
675	680	685	690	
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Ile Thr Asp Phe Tyr Leu Gly Pro *				
691	696			

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<222> (143)..(2032)

<220>

<221> misc\_feature

<222> (1)...(2155)

<223> n = a,t,c or g

<400> 65

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cgaaaactgt attgatcaag tg atg aaa cta cag aat ctg ttt gta gat gat 172  
Met Lys Leu Gln Asn Leu Phe Val Asp Asp  
1 5

tca ggt cga tat ttg gct att caa ttc cat ctg gaa tgt gca tat gtg 220  
Ser Gly Arg Tyr Leu Ala Ile Gln Phe His Leu Glu Cys Ala Tyr Val  
11 16 21 26

ttt tta tat tat tat gag tac aga aaa gca aaa gat cag ttg gat att 268  
Phe Leu Tyr Tyr Tyr Glu Tyr Arg Lys Ala Lys Asp Gln Leu Asp Ile  
27 32 37 42

gct aag gac atc agc caa tta caa att gat ttg aca ggt gct ttg gga 316  
Ala Lys Asp Ile Ser Gln Leu Gln Ile Asp Leu Thr Gly Ala Leu Gly  
43 48 53 58

aaa aga aca cgg ttc cag gaa aat tat gtg gca caa ctg att cta gat 364  
Lys Arg Thr Arg Phe Gln Glu Asn Tyr Val Ala Gln Leu Ile Leu Asp  
59 64 69 74

gta aga agg gaa ggg gat gtc ctt tca aat tgt gaa ttc act cca gca 412  
Val Arg Arg Glu Gly Asp Val Leu Ser Asn Cys Glu Phe Thr Pro Ala  
75 80 85 90

ccc act cct cag gaa cat tta acc aag aat ctt gag ctc aat gat gac 460  
Pro Thr Pro Gln Glu His Leu Thr Lys Asn Leu Glu Leu Asn Asp Asp  
91 96 101 106

acc att ctg aat gac ata aag tta gca gat tgt gaa cag ttc cag atg 508  
Thr Ile Leu Asn Asp Ile Lys Leu Ala Asp Cys Glu Gln Phe Gln Met  
107 112 117 122

ccg gat ctg tgt gct gaa gag atc gct att att ctt gga atc tgc act 556  
Pro Asp Leu Cys Ala Glu Glu Ile Ala Ile Ile Leu Gly Ile Cys Thr  
123 128 133 138

aat ttt caa aag aat aac cca gtg cac aca tta act gaa gtg gag ctt 604  
Asn Phe Gln Lys Asn Asn Pro Val His Thr Leu Thr Glu Val Glu Leu  
139 144 149 154

ctg gca ttt aca tca tgt ttg ctt tca caa cca aag ttc tgg gcc att 652

Leu Ala Phe Thr Ser Cys Leu Leu Ser Gln Pro Lys Phe Trp Ala Ile	
155 160 165 170	
cag aca tca gcc ttg atc ctc cgg aca aaa ctt gag aaa gga agt act	700
Gln Thr Ser Ala Leu Ile Leu Arg Thr Lys Leu Glu Lys Gly Ser Thr	
171 176 181 186	
cgc cga gtg gaa cgg gca atg agg cag aca cag gct ctt gca gac caa	748
Arg Arg Val Glu Arg Ala Met Arg Gln Thr Gln Ala Leu Ala Asp Gln	
187 192 197 202	
ttt gaa gat aaa act aca tct gta ttg gaa cgc ctg aag att ttc tat	796
Phe Glu Asp Lys Thr Thr Ser Val Leu Glu Arg Leu Lys Ile Phe Tyr	
203 208 213 218	
tgc tgt caa gta cca cct cac tgg gcc att cag cgc caa ctt gca agt	844
Cys Cys Gln Val Pro Pro His Trp Ala Ile Gln Arg Gln Leu Ala Ser	
219 224 229 234	
ttg ctc ttt gag ttg gga tgt acc agt tca gcc ctt cag ata ttt gaa	892
Leu Leu Phe Glu Leu Gly Cys Thr Ser Ser Ala Leu Gln Ile Phe Glu	
235 240 245 250	
aag cta gaa atg tgg gaa gat gtt gtc att tgt tat gaa aga gcc ggg	940
Lys Leu Glu Met Trp Glu Asp Val Val Ile Cys Tyr Glu Arg Ala Gly	
251 256 261 266	
cag cac gga aag gca gaa gaa atc ctt aga caa gag ctg gag aaa aaa	988
Gln His Gly Lys Ala Glu Glu Ile Leu Arg Gln Glu Leu Glu Lys Lys	
267 272 277 282	
gaa acg cct agt tta tac tgc ttg ctt gga gat gtc ctc gga gac cat	1036
Glu Thr Pro Ser Leu Tyr Cys Leu Leu Gly Asp Val Leu Gly Asp His	
283 288 293 298	
tct tgc tat gac aag gcc tgg gag ttg tcc cgg tac cgc agt gct cgt	1084
Ser Cys Tyr Asp Lys Ala Trp Glu Leu Ser Arg Tyr Arg Ser Ala Arg	
299 304 309 314	
gct cag cgc tcc aaa gcc ctc ctt cat ctt cgg aat aag gag ttt caa	1132
Ala Gln Arg Ser Lys Ala Leu Leu His Leu Arg Asn Lys Glu Phe Gln	
315 320 325 330	
gag tgt gta gag tgc ttc gaa cgc tcg gtt aag att aat ccc atg cag	1180
Glu Cys Val Glu Cys Phe Glu Arg Ser Val Lys Ile Asn Pro Met Gln	
331 336 341 346	
ctc ggg gtg tgg ttt tct ctc ggt tgt gcc tat ttg gcc ttg gaa gac	1228
Leu Gly Val Trp Phe Ser Leu Gly Cys Ala Tyr Leu Ala Leu Glu Asp	
347 352 357 362	
tat caa ggt tca gca aag gca ttt cag cgc tgt gtg act cta gaa ccc	1276
Tyr Gln Gly Ser Ala Lys Ala Phe Gln Arg Cys Val Thr Leu Glu Pro	
363 368 373 378	
gat aat gct gaa gct tgg aac aat ttg tca act tcc tat atc cga tta	1324
Asp Asn Ala Glu Ala Trp Asn Asn Leu Ser Thr Ser Tyr Ile Arg Leu	

379	384	389	394	
aaa caa aaa gta aaa gct ttt aga act tta caa gaa gct ctc aag tgt				1372
Lys Gln Lys Val Lys Ala Phe Arg Thr Leu Gln Glu Ala Leu Lys Cys				
395	400	405	410	
aac tat gaa cac tgg cag att tgg gaa aac tac atc ctc acc agc act				1420
Asn Tyr Glu His Trp Gln Ile Trp Glu Asn Tyr Ile Leu Thr Ser Thr				
411	416	421	426	
gac gtt ggg gaa ttt tca gaa gcc att aaa gct tat cac cgg ctc ttg				1468
Asp Val Gly Glu Phe Ser Glu Ala Ile Lys Ala Tyr His Arg Leu Leu				
427	432	437	442	
gac tta cgt gac aaa tac aaa gat gtt cag gtc ctt aaa att cta gtc				1516
Asp Leu Arg Asp Lys Tyr Lys Asp Val Gln Val Leu Lys Ile Leu Val				
443	448	453	458	
agg gca gtg att gat ggg atg act gat cga agt gga gat gtt gca act				1564
Arg Ala Val Ile Asp Gly Met Thr Asp Arg Ser Gly Asp Val Ala Thr				
459	464	469	474	
ggc ctc aaa gga aag ctg cag gag tta ttt ggc aga gtg act tca aga				1612
Gly Leu Lys Gly Lys Leu Gln Glu Leu Phe Gly Arg Val Thr Ser Arg				
475	480	485	490	
gtg aca aat gat gga gaa atc tgg agg ctg tat gcc cac gta tat gga				1660
Val Thr Asn Asp Gly Glu Ile Trp Arg Leu Tyr Ala His Val Tyr Gly				
491	496	501	506	
aat ggg cag agt gaa aag cct gat gaa aat gaa aag gca ttc cag tgc				1708
Asn Gly Gln Ser Glu Lys Pro Asp Glu Asn Glu Lys Ala Phe Gln Cys				
507	512	517	522	
ctc tca aag gca tac aag tgt gac acc cag tcc aat tgt tgg gag aaa				1756
Leu Ser Lys Ala Tyr Lys Cys Asp Thr Gln Ser Asn Cys Trp Glu Lys				
523	528	533	538	
gat att aca tca ttt aag gaa gtt gtt caa aga gcc tta gga ctt gca				1804
Asp Ile Thr Ser Phe Lys Glu Val Val Gln Arg Ala Leu Gly Leu Ala				
539	544	549	554	
cat gtg gcc ata aaa tgc agt aaa aac aaa tcc agt tcc caa gaa gct				1852
His Val Ala Ile Lys Cys Ser Lys Asn Lys Ser Ser Ser Gln Glu Ala				
555	560	565	570	
gta caa atg ctt tct tct gtt cga ctc aat tta cgg ggc ttg tta tct				1900
Val Gln Met Leu Ser Ser Val Arg Leu Asn Leu Arg Gly Leu Leu Ser				
571	576	581	586	
aaa gca aag caa ctt ttt aca gat gtg gca act gga gaa atg tcc agg				1948
Lys Ala Lys Gln Leu Phe Thr Asp Val Ala Thr Gly Glu Met Ser Arg				
587	592	597	602	
gaa tta gct gat gac ata aca gct atg gac acc tta gtg aca gag ctc				1996
Glu Leu Ala Asp Asp Ile Thr Ala Met Asp Thr Leu Val Thr Glu Leu				
603	608	613	618	

caa gac cta agc aac cag ttt cga aat cag tat tga ttct gctggaagca 2046  
 Gln Asp Leu Ser Asn Gln Phe Arg Asn Gln Tyr \*  
 619 624 629

gattctggaa aaggtgcttt cacctgctgg taaaagatac atctgtatat ctgaaatgca 2106

agatattgat ttttaaaata aatttgtttt atgacttaaa aaaaaaaaaa 2155

<210> 66  
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 <212> DNA  
 <213> Homo sapiens

<220>  
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 <222> (56)..(2224)

<220>  
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 Met  
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 Tyr Arg Ala Leu Tyr Ala Phe Arg Ser Ala Glu Pro Asn Ala Leu Ala  
 2 7 12 17

ttc gcc gcg ggc gag acc ttc ctg gtg cta gag cga agc agc gcg cac 154  
 Phe Ala Ala Gly Glu Thr Phe Leu Val Leu Glu Arg Ser Ser Ala His  
 18 23 28 33

tgg tgg ctg gcc gcg cgg gcg cgc agt ggt gag acg ggc tac gtg ccg 202  
 Trp Trp Leu Ala Ala Arg Ala Arg Ser Gly Glu Thr Gly Tyr Val Pro  
 34 39 44 49

cca gcc tac ctg cgc cgc ctg cag ggc ctg gag cag gat gtc ctc cag 250  
 Pro Ala Tyr Leu Arg Arg Leu Gln Gly Leu Glu Gln Asp Val Leu Gln  
 50 55 60 65

gcc att gac cgg gcc atc gag gct gta cac aac aca gcc atg cgg gat 298  
 Ala Ile Asp Arg Ala Ile Glu Ala Val His Asn Thr Ala Met Arg Asp  
 66 71 76 81

ggc ggc aag tac agc ctg gaa cag cgt gga gtc ctc cag aag ctg atc 346  
 Gly Gly Lys Tyr Ser Leu Glu Gln Arg Gly Val Leu Gln Lys Leu Ile  
 82 87 92 97

cac cac cgg aaa gag acc ctg tca cgc aga ggc cct tca gcc tcc agt 394  
 His His Arg Lys Glu Thr Leu Ser Arg Arg Gly Pro Ser Ala Ser Ser

98	103	108	113	
gtt gca gtt atg acc tca tca acc agt gac cac cac ttg gat gct gct				442
Val Ala Val Met Thr Ser Ser Thr Ser Asp His His Leu Asp Ala Ala				
114	119	124	129	
gca gcc agg cag ccc aat ggg gtg tgt cga gct ggg ttc gag cgg cag				490
Ala Ala Arg Gln Pro Asn Gly Val Cys Arg Ala Gly Phe Glu Arg Gln				
130	135	140	145	
cac agc cta ccc agt tct gag cat ctt ggg gca gat gga ggc ctc tac				538
His Ser Leu Pro Ser Ser Glu His Leu Gly Ala Asp Gly Gly Leu Tyr				
146	151	156	161	
cag atc cca ctt cca tct tcc cag atc cca cca cag cct cgc cga gca				586
Gln Ile Pro Leu Pro Ser Ser Gln Ile Pro Pro Gln Pro Arg Arg Ala				
162	167	172	177	
gca ccc acc aca ccg ccc cca cca gtg aag cgc cga gac cgc gag gcc				634
Ala Pro Thr Thr Pro Pro Pro Pro Val Lys Arg Arg Asp Arg Glu Ala				
178	183	188	193	
ctg atg gcc tct ggg agt ggt ggc cac aac acc atg ccc tcc ggg ggt				682
Leu Met Ala Ser Gly Ser Gly Gly His Asn Thr Met Pro Ser Gly Gly				
194	199	204	209	
aac tct gtg tcc agc ggc tcc tca gtc agc agc acc tcc ctg gac acg				730
Asn Ser Val Ser Ser Gly Ser Ser Val Ser Ser Thr Ser Leu Asp Thr				
210	215	220	225	
ctc tat acc agc tcc agc cca tct gaa cca ggc tcc agc tgc tca ccc				778
Leu Tyr Thr Ser Ser Ser Pro Ser Glu Pro Gly Ser Ser Cys Ser Pro				
226	231	236	241	
aca ccc cca cct gtg ccc cgc cga ggc acc cac acc acc gtg tcc caa				826
Thr Pro Pro Pro Val Pro Arg Arg Gly Thr His Thr Thr Val Ser Gln				
242	247	252	257	
gtc cag ccc cct ccc tcc aag gca tca gca cct gaa ccc cct gca gaa				874
Val Gln Pro Pro Pro Ser Lys Ala Ser Ala Pro Glu Pro Pro Ala Glu				
258	263	268	273	
gaa gaa gtg gca act ggt aca acc tca gcc tct gat gac ctg gaa gcc				922
Glu Glu Val Ala Thr Gly Thr Thr Ser Ala Ser Asp Asp Leu Glu Ala				
274	279	284	289	
ctg ggt aca ctg agc ctg ggg acc aca gag gag aag gca gca gct gag				970
Leu Gly Thr Leu Ser Leu Gly Thr Thr Glu Glu Lys Ala Ala Ala Glu				
290	295	300	305	
gcg gct gtg ccc agg acc att ggg gcc gag ctg atg gag ctg gtg cgg				1018
Ala Ala Val Pro Arg Thr Ile Gly Ala Glu Leu Met Glu Leu Val Arg				
306	311	316	321	
aga aac act ggc ctg agc cac gaa tta tgc cgg gtg gcc atc ggc atc				1066
Arg Asn Thr Gly Leu Ser His Glu Leu Cys Arg Val Ala Ile Gly Ile				
322	327	332	337	

ata gtg ggt cac atc cag gcc tcg gtg ccg gcc agc tca cca gtc atg Ile Val Gly His Ile Gln Ala Ser Val Pro Ala Ser Ser Pro Val Met 338 343 348 353	1114
gag cag gtc ctc ctc tca ctc gta gag ggc aag gac ctc agc atg gcc Glu Gln Val Leu Leu Ser Leu Val Glu Gly Lys Asp Leu Ser Met Ala 354 359 364 369	1162
ctg ccc tca ggg cag gtc tgc cac gac cag cag agg ctg gag gtg atc Leu Pro Ser Gly Gln Val Cys His Asp Gln Gln Arg Leu Glu Val Ile 370 375 380 385	1210
ttt gca gac ctg gct cgc cgg aag gac gac gcc cag cag cgc agt tgg Phe Ala Asp Leu Ala Arg Arg Lys Asp Asp Ala Gln Gln Arg Ser Trp 386 391 396 401	1258
gca cta tat gag gat gag ggt gtc atc cgc tgc tac cta gag gag ctg Ala Leu Tyr Glu Asp Glu Gly Val Ile Arg Cys Tyr Leu Glu Glu Leu 402 407 412 417	1306
ctg cat att ctg act gat gca gac cct gaa gtt tgc aag aaa atg tgc Leu His Ile Leu Thr Asp Ala Asp Pro Glu Val Cys Lys Lys Met Cys 418 423 428 433	1354
aag aga aac gag ttc gag tct gtc ctg gcc ttg gtg gcc tat tac caa Lys Arg Asn Glu Phe Glu Ser Val Leu Ala Leu Val Ala Tyr Tyr Gln 434 439 444 449	1402
atg gaa cac cga gca tca ctg cgg ctg ctg ctc ctc aag tgc ttt ggc Met Glu His Arg Ala Ser Leu Arg Leu Leu Leu Leu Lys Cys Phe Gly 450 455 460 465	1450
gcc atg tgc agc ctg gat gca gcc atc atc tcc acg ctt gtg tca tcc Ala Met Cys Ser Leu Asp Ala Ala Ile Ile Ser Thr Leu Val Ser Ser 466 471 476 481	1498
gtg ctg cct gta gag ctg gcg agg gac atg cag aca gac acg cag gac Val Leu Pro Val Glu Leu Ala Arg Asp Met Gln Thr Asp Thr Gln Asp 482 487 492 497	1546
cac cag aaa ctc tgt tac tct gcc ctc atc ctg gcc atg gtc ttc tcc His Gln Lys Leu Cys Tyr Ser Ala Leu Ile Leu Ala Met Val Phe Ser 498 503 508 513	1594
atg gga gag gca gtg ccc tat gca cac tat gag cac ctg ggc acg cct Met Gly Glu Ala Val Pro Tyr Ala His Tyr Glu His Leu Gly Thr Pro 514 519 524 529	1642
ttc gcc cag ttc cta ctg aac atc gtc gag gat ggg ctg ccc ttg gac Phe Ala Gln Phe Leu Leu Asn Ile Val Glu Asp Gly Leu Pro Leu Asp 530 535 540 545	1690
acc aca gag cag ctg ccg gac ctc tgc gtg aac ctg ctt ctg gct ctc Thr Thr Glu Gln Leu Pro Asp Leu Cys Val Asn Leu Leu Leu Ala Leu 546 551 556 561	1738

aac ctg cac ctg cca gct gct gac cag aat gtc atc atg gct gcc ctg	1786
Asn Leu His Leu Pro Ala Ala Asp Gln Asn Val Ile Met Ala Ala Leu	
562 567 572 577	
agc aaa cac gcc aat gtc aag atc ttc tcc gag aag ctg ttg ttg ctc	1834
Ser Lys His Ala Asn Val Lys Ile Phe Ser Glu Lys Leu Leu Leu Leu	
578 583 588 593	
ctg aac aga ggg gat gac cct gtg cgc atc ttc aaa cat gag cca cag	1882
Leu Asn Arg Gly Asp Asp Pro Val Arg Ile Phe Lys His Glu Pro Gln	
594 599 604 609	
cca cca cac tot gtc ctc aag ttc ctg cag gac gtg ttt ggc agc ccg	1930
Pro Pro His Ser Val Leu Lys Phe Leu Gln Asp Val Phe Gly Ser Pro	
610 615 620 625	
gcc aca gct gcc atc ttc tac cac aca gac atg atg gct ctc att gac	1978
Ala Thr Ala Ala Ile Phe Tyr His Thr Asp Met Met Ala Leu Ile Asp	
626 631 636 641	
atc act gtg cgg cac atc gca gac ctg tca cca gga gac aag ctg cgc	2026
Ile Thr Val Arg His Ile Ala Asp Leu Ser Pro Gly Asp Lys Leu Arg	
642 647 652 657	
atg gag tac ctc tcc ctg atg cat gct ata gtc cgc acc aca ccc tac	2074
Met Glu Tyr Leu Ser Leu Met His Ala Ile Val Arg Thr Thr Pro Tyr	
658 663 668 673	
ctg cag cac cgc cac cgg cta ccc gac ctg cag gcc ata ctg cga cgc	2122
Leu Gln His Arg His Arg Leu Pro Asp Leu Gln Ala Ile Leu Arg Arg	
674 679 684 689	
atc ctg aat gag gag gag acc tca ccc cag tgc cag atg gac cgc atg	2170
Ile Leu Asn Glu Glu Glu Thr Ser Pro Gln Cys Gln Met Asp Arg Met	
690 695 700 705	
att gtc cga gag atg tgc aag gaa ttc ctg gtg ctg ggg gag gct ccc	2218
Ile Val Arg Glu Met Cys Lys Glu Phe Leu Val Leu Gly Glu Ala Pro	
706 711 716 721	
agc tag caccttgctg tctcccttc cctgcagctc cagtcagtgt gcaggggact	2274
Ser *	
722	
caggggcttg gcctaagaa tgttttgcac tgacagtggg aggggataag gtggcangaa	2334
ggaacctgag caggaccccc acctgaagta gaacttaaga gaggggcca gtgtangatt	2394
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<212> DNA  
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 <222> (386) .. (2194)

<400> 67

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gatccagcca ctttggcctc acaaagtgtc gggattatag gcaagagcga tggcgcccgg      180
cccactcagc aggattccta gaatgggcac gagctctgcc ctcattcacag tccaaaagtg      240
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ctccccgggg gccttcgcag gcttctctgc tgggtgcttct gtgcctgtgg gtctggattc      360
ctccagggcc tgatcctggg tgcag  atg cag ctg gaa gcc ctg aac ctg ctg      412
                        Met Gln Leu Glu Ala Leu Asn Leu Leu
                        1                      5

cac aca cta gtc tgg gca cgg agt ctc tgc cgt gcc gga gct gtg cag      460
His Thr Leu Val Trp Ala Arg Ser Leu Cys Arg Ala Gly Ala Val Gln
  10                      15                      20                      25

aca cag gag cgg ctg tca ggc agt gcc agc cct gag caa gtg cca gct      508
Thr Gln Glu Arg Leu Ser Gly Ser Ala Ser Pro Glu Gln Val Pro Ala
  26                      31                      36                      41

ggt gag tgc tgt gct ctg cag gag tat gag gcc gcc gtg gag cag ctc      556
Gly Glu Cys Cys Ala Leu Gln Glu Tyr Glu Ala Ala Val Glu Gln Leu
  42                      47                      52                      57

aag agc gag cag atc cgg gcg cag gct gag gag agg agg aag acc ctg      604
Lys Ser Glu Gln Ile Arg Ala Gln Ala Glu Glu Arg Arg Lys Thr Leu
  58                      63                      68                      73

agc gag gag acc cgg cag cac cag gcc agg gcc cag tat caa gac aag      652
Ser Glu Glu Thr Arg Gln His Gln Ala Arg Ala Gln Tyr Gln Asp Lys
  74                      79                      84                      89

ctg gcc cgg cag cgc tac gag gac caa ctg aag cag cag caa ctt ctc      700
Leu Ala Arg Gln Arg Tyr Glu Asp Gln Leu Lys Gln Gln Gln Leu Leu
  90                      95                      100                      105

aat gag gag aat tta cgg aag cag gag gag tcc gtg cag aag cag gaa      748
Asn Glu Glu Asn Leu Arg Lys Gln Glu Glu Ser Val Gln Lys Gln Glu
  106                      111                      116                      121

gcc atg cgg cga gcc acc gtg gag cgg gag atg gag ctg cgg cac aag      796
Ala Met Arg Arg Ala Thr Val Glu Arg Glu Met Glu Leu Arg His Lys
  122                      127                      132                      137

aat gag atg ctg cga gtg gag acc gag gcc cgg gcg cgc gcc aag gcc      844

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Asn Glu Met Leu Arg Val Glu Thr Glu Ala Arg Ala Arg Ala Lys Ala	
138 143 148 153	
gag cgg gag aat gca gac atc atc cgc gag cag atc cgc ctg aag gcg	892
Glu Arg Glu Asn Ala Asp Ile Ile Arg Glu Gln Ile Arg Leu Lys Ala	
154 159 164 169	
tcc gag cac cgt cag acc gtc ttg gag tcc atc agg acg gct ggc acc	940
Ser Glu His Arg Gln Thr Val Leu Glu Ser Ile Arg Thr Ala Gly Thr	
170 175 180 185	
ttg ttt ggg gaa gga ttc cgt gcc ttt gtg aca gac cgg gac aaa gtg	988
Leu Phe Gly Glu Gly Phe Arg Ala Phe Val Thr Asp Arg Asp Lys Val	
186 191 196 201	
aca gcc acg gtg gct ggg ctg acg ctg ctg gct gtc ggg gtc tac tca	1036
Thr Ala Thr Val Ala Gly Leu Thr Leu Leu Ala Val Gly Val Tyr Ser	
202 207 212 217	
gcc aag aat gcg aca gcc gtc act ggc cgc ttc atc gag gct cgg ctg	1084
Ala Lys Asn Ala Thr Ala Val Thr Gly Arg Phe Ile Glu Ala Arg Leu	
218 223 228 233	
ggg aag ccg tcc cta gtg agg gag acg tcc cgc atc acg gtg ctg gag	1132
Gly Lys Pro Ser Leu Val Arg Glu Thr Ser Arg Ile Thr Val Leu Glu	
234 239 244 249	
gcg ctg cgg cac ccc atc cag gtc agc cgg cgg ctc ctc agt cga ccc	1180
Ala Leu Arg His Pro Ile Gln Val Ser Arg Arg Leu Leu Ser Arg Pro	
250 255 260 265	
cag gac gtg ctg gag ggt gtt gtg ctt agt ccc agc ctg gaa gca cgg	1228
Gln Asp Val Leu Glu Gly Val Val Leu Ser Pro Ser Leu Glu Ala Arg	
266 271 276 281	
gtg cgc gac atc gcc ata gca acc agg aac acc aag aag aac cgg ggc	1276
Val Arg Asp Ile Ala Ile Ala Thr Arg Asn Thr Lys Lys Asn Arg Gly	
282 287 292 297	
ctg tac agg cac atc ctg ctg tat ggg cca cca ggc acc ggg aag acg	1324
Leu Tyr Arg His Ile Leu Leu Tyr Gly Pro Pro Gly Thr Gly Lys Thr	
298 303 308 313	
ctg ttt gcc aag aaa ctc gcc ctg cac tca ggc atg gac tac gcc atc	1372
Leu Phe Ala Lys Lys Leu Ala Leu His Ser Gly Met Asp Tyr Ala Ile	
314 319 324 329	
atg aca ggc ggg gac gtg gcc ccc atg ggg cgg gaa ggc gtg acc gcc	1420
Met Thr Gly Gly Asp Val Ala Pro Met Gly Arg Glu Gly Val Thr Ala	
330 335 340 345	
atg cac aag ctc ttt gac tgg gcc aat acc agc cgg cgc ggc ctc ctg	1468
Met His Lys Leu Phe Asp Trp Ala Asn Thr Ser Arg Arg Gly Leu Leu	
346 351 356 361	
ctc ttc atg gat gaa gca gac gcc ttc ctt cgg aag cga gcc act gag	1516
Leu Phe Met Asp Glu Ala Asp Ala Phe Leu Arg Lys Arg Ala Thr Glu	

362	367	372	377	
gag ata agc aag gac ctc aga gcc aca ctg aac gcc ttc ctg tac cac				1564
Glu Ile Ser Lys Asp Leu Arg Ala Thr Leu Asn Ala Phe Leu Tyr His				
378	383	388	393	
atg ggc caa cac agc aac aaa ttc atg ctg gtc ctg gcc agc aat ctg				1612
Met Gly Gln His Ser Asn Lys Phe Met Leu Val Leu Ala Ser Asn Leu				
394	399	404	409	
cct gag cag ttc gac tgt gcc atc aac agc cgc att gac gtg atg gtc				1660
Pro Glu Gln Phe Asp Cys Ala Ile Asn Ser Arg Ile Asp Val Met Val				
410	415	420	425	
cac ttc gac ctg ccg cag cag gag gag cgg gag cgc ctg gtg aga ctg				1708
His Phe Asp Leu Pro Gln Gln Glu Glu Arg Glu Arg Leu Val Arg Leu				
426	431	436	441	
cat ttt gac aac tgt gtt ctt aag ccg gcc aca gaa gga aaa cgg cgc				1756
His Phe Asp Asn Cys Val Leu Lys Pro Ala Thr Glu Gly Lys Arg Arg				
442	447	452	457	
ctg aag ctg gcc cag ttt gac tac ggg agg aag tgc tgc gag gtc gct				1804
Leu Lys Leu Ala Gln Phe Asp Tyr Gly Arg Lys Cys Ser Glu Val Ala				
458	463	468	473	
cgg ctg acg gag ggc atg tgc ggc cgg gag atc gct cag ctg gcc gtg				1852
Arg Leu Thr Glu Gly Met Ser Gly Arg Glu Ile Ala Gln Leu Ala Val				
474	479	484	489	
tcc tgg cag gcc acg gca tat gcc tcc aag gac ggg gtc ctc act gag				1900
Ser Trp Gln Ala Thr Ala Tyr Ala Ser Lys Asp Gly Val Leu Thr Glu				
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gcc atg atg gac gcc tgt gtg caa gat gct gtc cag cag tac cga cag				1948
Ala Met Met Asp Ala Cys Val Gln Asp Ala Val Gln Gln Tyr Arg Gln				
506	511	516	521	
aag atg cgc tgg ctg aag gcg gag ggg cct ggg cgc cgg gtc gag cac				1996
Lys Met Arg Trp Leu Lys Ala Glu Gly Pro Gly Arg Arg Val Glu His				
522	527	532	537	
ccc cta tcc gga gtc caa ggc gag acc ctc acc tca tgg agc ctg gcc				2044
Pro Leu Ser Gly Val Gln Gly Glu Thr Leu Thr Ser Trp Ser Leu Ala				
538	543	548	553	
acg gac ccc tcc tac ccc tgc ctt gcc ggc ccc tgc aca ttt agg ata				2092
Thr Asp Pro Ser Tyr Pro Cys Leu Ala Gly Pro Cys Thr Phe Arg Ile				
554	559	564	569	
tgc tcc tgg atg ggg act ggg ctg tgc cca ggg cct ctg tcc ccc agg				2140
Cys Ser Trp Met Gly Thr Gly Leu Cys Pro Gly Pro Leu Ser Pro Arg				
570	575	580	585	
atg tct tgt ggt ggc ggt cgg ccg ttc tgc ccc cca ggg cac ccc ctg				2188
Met Ser Cys Gly Gly Gly Arg Pro Phe Cys Pro Pro Gly His Pro Leu				
586	591	596	601	

ttg tag gcactggcta gggaggggca ggcctccttc ctgcccctcg agacactctt 2244  
 Leu \*  
 602  
 gggagatgca ttttccgtct ggctcacagg gggaggggtga ggctttgtac cccagcccct 2304  
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 agacagaagt ggggcccgcct gaacctgtct tccagccatg gccagggggccc acggaacccg 2484  
 gcaggggtgt ctgaagccgc cctgtcagct ggccgggtcca agcctgtggc tggagctggg 2544  
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 Met Val Lys Asn Leu Ser Gly Tyr Ser Glu Ser Cys  
 1 5 10  
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 Lys Leu Leu Val Ser Pro Leu Gly Gly Arg Leu Gly Ala Arg Pro Leu  
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 Leu Leu Phe His Leu Trp Ile Arg Gln Phe Leu Val Arg Phe Arg Arg  
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 cga tcc cgc gcc ctg ggt gcg gtg agg ccg ctg gga cag cgg agg tgc 255  
 Arg Ser Arg Ala Leu Gly Ala Val Arg Pro Leu Gly Gln Arg Arg Cys  
 45 50 55 60  
 ctc ccg acg cga agc agc gag ctg agg cgg cgg cca gcg ggg aag atg 303  
 Leu Pro Thr Arg Ser Ser Glu Leu Arg Arg Arg Pro Ala Gly Lys Met  
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Ser Gly Ser Ser Ala Arg Ser Ser His Leu Ser Gln Pro Val Val Lys	
77 82 87 92	
agc gtg ctt gtg tac cgc aac ggg gac ccc ttc tac gcg ggg cgc cgc	399
Ser Val Leu Val Tyr Arg Asn Gly Asp Pro Phe Tyr Ala Gly Arg Arg	
93 98 103 108	
gtc gtc atc cat gag aag aag gtg tcc agc ttc gaa gtc ttc ctg aag	447
Val Val Ile His Glu Lys Lys Val Ser Ser Phe Glu Val Phe Leu Lys	
109 114 119 124	
gag gtg acc ggc ggc gtt cag gca ccc ttt ggg gcc gtc agg aac atc	495
Glu Val Thr Gly Gly Val Gln Ala Pro Phe Gly Ala Val Arg Asn Ile	
125 130 135 140	
tac acc ccg cgg act ggc cac cga atc cgg aag cta gac cag atc cag	543
Tyr Thr Pro Arg Thr Gly His Arg Ile Arg Lys Leu Asp Gln Ile Gln	
141 146 151 156	
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Ser Gly Gly Asn Tyr Val Ala Gly Gly Gln Glu Ala Phe Lys Lys Leu	
157 162 167 172	
aat tac ttg gac ata gga gaa atc aag aaa aga cca atg gaa gtt gtt	639
Asn Tyr Leu Asp Ile Gly Glu Ile Lys Lys Arg Pro Met Glu Val Val	
173 178 183 188	
aat aca gag gta aaa cca gta atc cat agc agg atc aac gtg tca gct	687
Asn Thr Glu Val Lys Pro Val Ile His Ser Arg Ile Asn Val Ser Ala	
189 194 199 204	
cgc ttt aga aaa ccg ctt cag gag ccg tgc act atc ttc ttg att gca	735
Arg Phe Arg Lys Pro Leu Gln Glu Pro Cys Thr Ile Phe Leu Ile Ala	
205 210 215 220	
aat gga gac ctc ata aac cca gct tct cgc ctc ctt atc ccc aga aaa	783
Asn Gly Asp Leu Ile Asn Pro Ala Ser Arg Leu Leu Ile Pro Arg Lys	
221 226 231 236	
acc ttg aat cag tgg gat cat gta cta caa atg gtc aca gaa aaa atc	831
Thr Leu Asn Gln Trp Asp His Val Leu Gln Met Val Thr Glu Lys Ile	
237 242 247 252	
act ctg agg agc ggg gct gtt cac agg ctt tat act tta gaa gga aaa	879
Thr Leu Arg Ser Gly Ala Val His Arg Leu Tyr Thr Leu Glu Gly Lys	
253 258 263 268	
ctt gtt gag agt gga gca gag ttg gag aat ggg cag ttt tat gtg gct	927
Leu Val Glu Ser Gly Ala Glu Leu Glu Asn Gly Gln Phe Tyr Val Ala	
269 274 279 284	
gtt ggc aga gat aag ttt aag aaa ctg cct tac ggt gag tta ctt ttt	975
Val Gly Arg Asp Lys Phe Lys Lys Leu Pro Tyr Gly Glu Leu Leu Phe	
285 290 295 300	
gac aag tca acg atg aga agg cct ttt ggt cag aaa gct tct tca cta	1023

Asp Lys Ser Thr Met Arg Arg Pro Phe Gly Gln Lys Ala Ser Ser Leu	
301 306 311 316	
cct cct att gta gga tcc aga aag tct aaa ggg agt gga aat gat cgc	1071
Pro Pro Ile Val Gly Ser Arg Lys Ser Lys Gly Ser Gly Asn Asp Arg	
317 322 327 332	
cac tct aag tca aca gtt gga tcc agt gac aac tca tct cct cag ccc	1119
His Ser Lys Ser Thr Val Gly Ser Ser Asp Asn Ser Ser Pro Gln Pro	
333 338 343 348	
ctg aag agg aaa ggg aaa aaa gaa gac gtg aat tca gaa aaa ctg acg	1167
Leu Lys Arg Lys Gly Lys Lys Glu Asp Val Asn Ser Glu Lys Leu Thr	
349 354 359 364	
aaa ttg aaa caa aat gta aaa tta aag aat tca caa gaa acc att cca	1215
Lys Leu Lys Gln Asn Val Lys Leu Lys Asn Ser Gln Glu Thr Ile Pro	
365 370 375 380	
aat agt gat gaa ggc att ttc aaa gct gga gca gag agg tct gaa aca	1263
Asn Ser Asp Glu Gly Ile Phe Lys Ala Gly Ala Glu Arg Ser Glu Thr	
381 386 391 396	
cgg ggg gca gca gaa gtc caa gaa gat gaa gat act cag gtt gag gtt	1311
Arg Gly Ala Ala Glu Val Gln Glu Asp Glu Asp Thr Gln Val Glu Val	
397 402 407 412	
cca gtc gat cag agg cca gca gaa ata gta gac gag gaa gaa gat gga	1359
Pro Val Asp Gln Arg Pro Ala Glu Ile Val Asp Glu Glu Glu Asp Gly	
413 418 423 428	
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Glu Lys Ala Asn Lys Asp Ala Glu Gln Lys Glu Asp Phe Ser Gly Met	
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aat ggt gac ctt gaa gag gaa gga ggt agg gag gct aca gat gcc cct	1455
Asn Gly Asp Leu Glu Glu Glu Gly Gly Arg Glu Ala Thr Asp Ala Pro	
445 450 455 460	
gag caa gtc gag gag att ctg gat cac agt gag cag cag gca cgc cct	1503
Glu Gln Val Glu Glu Ile Leu Asp His Ser Glu Gln Gln Ala Arg Pro	
461 466 471 476	
gct cgt gta aat gga ggc acc gat gag gag aat ggt gag gag ctg cag	1551
Ala Arg Val Asn Gly Gly Thr Asp Glu Glu Asn Gly Glu Glu Leu Gln	
477 482 487 492	
cag gtt aat aat gag ctt caa ctg gtc cta gac aag gaa aga aag tct	1599
Gln Val Asn Asn Glu Leu Gln Leu Val Leu Asp Lys Glu Arg Lys Ser	
493 498 503 508	
caa gga gct ggc agt gga caa gat gag gta ttt cta ttg ctt ttg ctt	1647
Gln Gly Ala Gly Ser Gly Gln Asp Glu Val Phe Leu Leu Leu Leu Leu	
509 514 519 524	
gct tat gtg aat gca tga atatgt gtgtgtgtac atgcgtgcat tcagagaatt	1701
Ala Tyr Val Asn Ala *	

525

530

aatcaagtgt ttaggacttg tattgaaacc acttggtggtt gagtaggaaa gatccaatac 1761  
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 cagtttgtgt ctgccctttt gcgtcgacgc ggccgcgaat tcggatcctc gagagatctc 1881  
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 actggcc atg cag aca gag cga ggc aac ggt ttg cag gcg gtc cag cag 169  
 Met Gln Thr Glu Arg Gly Asn Gly Leu Gln Ala Val Gln Gln  
 1 5 10  
 cac atc aaa aag aac cag ggc ctg cgg cgg gag atc cag gcg cat ggg 217  
 His Ile Lys Lys Asn Gln Gly Leu Arg Arg Glu Ile Gln Ala His Gly  
 15 20 25 30  
 ccg cgc ctg gag gag gtg ctg gag cgc gcg ggc gcg ctg gcg tcg ctg 265  
 Pro Arg Leu Glu Glu Val Leu Glu Arg Ala Gly Ala Leu Ala Ser Leu  
 31 36 41 46  
 cgc agc ccg gag gca gag gca gtg cgc cgg ggc ctg gag cag ctg cag 313  
 Arg Ser Pro Glu Ala Glu Ala Val Arg Arg Gly Leu Glu Gln Leu Gln  
 47 52 57 62  
 agc gcc tgg gcc gga ctg cgg gag gct gcc gag cga cgg cag cag gtg 361  
 Ser Ala Trp Ala Gly Leu Arg Glu Ala Ala Glu Arg Arg Gln Gln Val  
 63 68 73 78  
 ctg gac gcc gcc ttc cag gtg gag cag tac tac ttc gac gtg gct gag 409  
 Leu Asp Ala Ala Phe Gln Val Glu Gln Tyr Tyr Phe Asp Val Ala Glu  
 79 84 89 94  
 gtg gag gcg tgg ctg ggc gag cag gag ctg ctc atg atg agt gag gag 457  
 Val Glu Ala Trp Leu Gly Glu Gln Glu Leu Leu Met Met Ser Glu Asp  
 95 100 105 110

aag ggc aag gac gaa cag agc acc ctg cag ctg ctc aag aaa cac ctg	505
Lys Gly Lys Asp Glu Gln Ser Thr Leu Gln Leu Leu Lys Lys His Leu	
111 116 121 126	
cag ctg gag caa ggc gtg gag aac tac gag gaa agc atc gcg cag ctg	553
Gln Leu Glu Gln Gly Val Glu Asn Tyr Glu Glu Ser Ile Ala Gln Leu	
127 132 137 142	
tcg cgc cag tgc cgg gcg ctg ctg gag atg ggg cac ccg gac agc gag	601
Ser Arg Gln Cys Arg Ala Leu Leu Glu Met Gly His Pro Asp Ser Glu	
143 148 153 158	
cag atc agc cgg cgg cag tct cag gtg gac cgc ctg tac gtg gcg ctc	649
Gln Ile Ser Arg Arg Gln Ser Gln Val Asp Arg Leu Tyr Val Ala Leu	
159 164 169 174	
aag gag ctg ggt gag gag cgc cgg gtg gct ctg gaa cag cag tac tgg	697
Lys Glu Leu Gly Glu Glu Arg Arg Val Ala Leu Glu Gln Gln Tyr Trp	
175 180 185 190	
ctg tac cag ctc agc cgc cag gtg agc gag ctt gag cac tgg att gcc	745
Leu Tyr Gln Leu Ser Arg Gln Val Ser Glu Leu Glu His Trp Ile Ala	
191 196 201 206	
gag aag gag gtg gtg gct ggc tca ccc gag ctc ggc cag gac ttt gag	793
Glu Lys Glu Val Val Ala Gly Ser Pro Glu Leu Gly Gln Asp Phe Glu	
207 212 217 222	
cat gtc tcg gtg ctg cag gag aaa ttc tca gag ttt gcc agc gag aca	841
His Val Ser Val Leu Gln Glu Lys Phe Ser Glu Phe Ala Ser Glu Thr	
223 228 233 238	
ggt atg gca ggg cgg gaa cgg ctg gca gct gtg aac cag atg gtg gat	889
Gly Met Ala Gly Arg Glu Arg Leu Ala Ala Val Asn Gln Met Val Asp	
239 244 249 254	
gag ctg atc gag tgt ggc cat aca gca gcg gcc acc atg gcc gag tgg	937
Glu Leu Ile Glu Cys Gly His Thr Ala Ala Ala Thr Met Ala Glu Trp	
255 260 265 270	
aag gac gga ctg aac gag gcc tgg gct gag ctg ctg gag ctc atg ggc	985
Lys Asp Gly Leu Asn Glu Ala Trp Ala Glu Leu Leu Glu Leu Met Gly	
271 276 281 286	
aca cgg gcc cag ctg ctg gcc gcc tct cgg gag ctt cat aag ttc ttc	1033
Thr Arg Ala Gln Leu Leu Ala Ala Ser Arg Glu Leu His Lys Phe Phe	
287 292 297 302	
agt gac gcc cga gag ctt cag gga cag att gag gag aag cgg agg cgg	1081
Ser Asp Ala Arg Glu Leu Gln Gly Gln Ile Glu Glu Lys Arg Arg Arg	
303 308 313 318	
ctg ccc cgc ctg acc acc ccg cct gag ccg aga ccc agt gcc agt tcc	1129
Leu Pro Arg Leu Thr Thr Pro Pro Glu Pro Arg Pro Ser Ala Ser Ser	
319 324 329 334	
atg cag cgg acc ctg aga gcc ttt gag cat gac ctg cag ctc ctc gtg	1177



Met Gln Arg Thr Leu Arg Ala Phe Glu His Asp Leu Gln Leu Leu Val	
335 340 345 350	
tcc cag gta cgg cag ctg cag gag ggg gcg gcc cag ctg cgg acg gtg	1225
Ser Gln Val Arg Gln Leu Gln Glu Gly Ala Ala Gln Leu Arg Thr Val	
351 356 361 366	
tat gcg ggt gaa cat gcc gag gcc atc gct agc cgg gag cag gag gtg	1273
Tyr Ala Gly Glu His Ala Glu Ala Ile Ala Ser Arg Glu Gln Glu Val	
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ctg cag ggt tgg aaa gag ctg ctg tca gcc tgt gag gat gcc cgc ctg	1321
Leu Gln Gly Trp Lys Glu Leu Leu Ser Ala Cys Glu Asp Ala Arg Leu	
383 388 393 398	
cat gtc agc tcc aca gcc gac gcc ctg cgc ttc cac agc caa gtc cgc	1369
His Val Ser Ser Thr Ala Asp Ala Leu Arg Phe His Ser Gln Val Arg	
399 404 409 414	
gac ctg ctc tcc tgg atg gat ggc atc gcc agc cag att ggg gca gcc	1417
Asp Leu Leu Ser Trp Met Asp Gly Ile Ala Ser Gln Ile Gly Ala Ala	
415 420 425 430	
gac aag ccc agg tgc ccc tca tcc ctc ctc ggg ctt cct gcc tcc ccc	1465
Asp Lys Pro Arg Cys Pro Ser Ser Leu Leu Gly Leu Pro Ala Ser Pro	
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Trp Trp Pro Thr Pro Ala Thr Pro Ser Pro Leu Thr Ala Pro Phe Ser	
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atg gaa tga caacagc caatatctgt gtggcgccctc tgtgtgctag gcactgttct	1569
Met Glu *	
463	
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actcacagac tggggtggcc cagaacaact gctacatctg g	atg gag aag agg	173
	Met Glu Lys Arg	
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cac cga ggc cca ggc ctt gcc ccg ggc cag ctg tat aca tac cct gcc		221
His Arg Gly Pro Gly Leu Ala Pro Gly Gln Leu Tyr Thr Tyr Pro Ala		
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cgc tgc tgg cgc aag aag aga cga ttg cac cca cct gaa gat cca aaa		269
Arg Cys Trp Arg Lys Lys Arg Arg Leu His Pro Pro Glu Asp Pro Lys		
21 26 31 36		
ctg cgg ctg ctg gag ata aaa cct gaa gtg gag ctt ccc ctg aag aag		317
Leu Arg Leu Leu Glu Ile Lys Pro Glu Val Glu Leu Pro Leu Lys Lys		
37 42 47 52		
gat ggg ttc acc tca gag agc acc acg ctg gaa gcc ttg ctc cgt ggc		365
Asp Gly Phe Thr Ser Glu Ser Thr Thr Leu Glu Ala Leu Leu Arg Gly		
53 58 63 68		
gag ggg gtt gag aag aag gtg gat gcc agg gag gag gaa agc atc cag		413
Glu Gly Val Glu Lys Lys Val Asp Ala Arg Glu Glu Glu Ser Ile Gln		
69 74 79 84		
gaa ata cag agg gtt ttg gaa aat gat gaa aat gta gaa gaa ggg aat		461
Glu Ile Gln Arg Val Leu Glu Asn Asp Glu Asn Val Glu Glu Gly Asn		
85 90 95 100		
gaa gaa gag gat ttg gaa gag gat att ccc aag cga aag aac agg act		509
Glu Glu Glu Asp Leu Glu Glu Asp Ile Pro Lys Arg Lys Asn Arg Thr		
101 106 111 116		
aga gga cgg gct cgc ggc tct gca ggg ggc agg agg agg cac gac gcc		557
Arg Gly Arg Ala Arg Gly Ser Ala Gly Gly Arg Arg Arg His Asp Ala		
117 122 127 132		
gcc tct cag gaa gac cac gac aaa cct tac gtc tgt gac atc tgt ggc		605
Ala Ser Gln Glu Asp His Asp Lys Pro Tyr Val Cys Asp Ile Cys Gly		
133 138 143 148		
aag cgc tac aag aac cga ccg ggg ctc agc tac cac tat gct cac act		653
Lys Arg Tyr Lys Asn Arg Pro Gly Leu Ser Tyr His Tyr Ala His Thr		
149 154 159 164		
cac ctg gcc agc gag gag ggg gat gaa gct caa gac cag gag act cgg		701
His Leu Ala Ser Glu Glu Gly Asp Glu Ala Gln Asp Gln Glu Thr Arg		
165 170 175 180		
tcc cca ccc aac cac aga aat gag aac cac agg ccc cag aaa gga ccg		749
Ser Pro Pro Asn His Arg Asn Glu Asn His Arg Pro Gln Lys Gly Pro		
181 186 191 196		
gat gga aca gtc att ccc aat aac tac tgt gac ttc tgc ttg ggg ggc		797
Asp Gly Thr Val Ile Pro Asn Asn Tyr Cys Asp Phe Cys Leu Gly Gly		
197 202 207 212		

tcc aac atg aac aag aag agt ggg cgg cct gaa gag ctg gtg tcc tgc	845
Ser Asn Met Asn Lys Lys Ser Gly Arg Pro Glu Glu Leu Val Ser Cys	
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Ala Asp Cys Gly Arg Ser Ala His Leu Gly Gly Glu Gly Arg Lys Glu	
229 234 239 244	
aag gag gca gcg gcc gca gca cgt acc acg gag gac tta ttc ggt tcc	941
Lys Glu Ala Ala Ala Ala Arg Thr Thr Glu Asp Leu Phe Gly Ser	
245 250 255 260	
acg tca gaa agt gac acg tca act ttc cac ggc ttt gat gag gac gat	989
Thr Ser Glu Ser Asp Thr Ser Thr Phe His Gly Phe Asp Glu Asp Asp	
261 266 271 276	
ttg gaa gag cct cgc tcc tgt cga gga cgc cgc agt ggc cgg ggt tcg	1037
Leu Glu Glu Pro Arg Ser Cys Arg Gly Arg Arg Ser Gly Arg Gly Ser	
277 282 287 292	
ccc aca gca gat aaa aag ggc agt tgc taa a cccacggaac agactctctg	1088
Pro Thr Ala Asp Lys Lys Gly Ser Cys *	
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tgtcagtagt tcccagagaa gtcgggggta cccatacccg ggcttacctc cacaccttgg	1808
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gcccacccgc tgtacaacgt cccggaggag ccgcctctcc tgggagccga ggactcgctc      180
ctggccagcc aggaggcgct gcggtattac cggaggaagg tggcccgcgtg gaacaggcga      240

cacaag  atg tac aga gag cag atg aac ctt acc tcc ctg gac ccc cca      288
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          1             5             10

ctg cag ctc cga ctc gag gcc agc tgg gtc cag ttc cac ctg ggt att      336
Leu Gln Leu Arg Leu Glu Ala Ser Trp Val Gln Phe His Leu Gly Ile
  15             20             25             30

aac cgc cat ggg ctc tac tcc cgg tcc agc cct gtt gtc agc aaa ctt      384
Asn Arg His Gly Leu Tyr Ser Arg Ser Ser Pro Val Val Ser Lys Leu
  31             36             41             46

ctg caa gac atg agg cac ttt ccc acc atc agt gct gat tac agt caa      432
Leu Gln Asp Met Arg His Phe Pro Thr Ile Ser Ala Asp Tyr Ser Gln
  47             52             57             62

gat gag aaa gcc ttg ctg ggg gca tgt gac tgc acc cag att gtg aaa      480
Asp Glu Lys Ala Leu Leu Gly Ala Cys Asp Cys Thr Gln Ile Val Lys
  63             68             73             78

ccc agt ggg gtc cac ctc aag ctg gtg ctg agg ttc tcg gat ttc ggg      528
Pro Ser Gly Val His Leu Lys Leu Val Leu Arg Phe Ser Asp Phe Gly
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aag gcc atg ttc aaa ccc atg aga cag cag cga gat gag gag aca cca      576
Lys Ala Met Phe Lys Pro Met Arg Gln Gln Arg Asp Glu Glu Thr Pro
  95             100            105            110

gtg gac ttc ttc tac ttc att gac ttt cag aga cac aat gct gag atc      624
Val Asp Phe Phe Tyr Phe Ile Asp Phe Gln Arg His Asn Ala Glu Ile
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gca gct ttc cat ctg gac agg att ctg gac ttc cga cgg gtg ccg cca      672
Ala Ala Phe His Leu Asp Arg Ile Leu Asp Phe Arg Arg Val Pro Pro
  127            132            137            142

aca gtg ggg agg ata gta aat gtc acc aag gaa atc cta gag gtc acc      720
Thr Val Gly Arg Ile Val Asn Val Thr Lys Glu Ile Leu Glu Val Thr
  143            148            153            158

aag aat gaa atc ctg cag agt gtt ttc ttt gtc tct cca gcg agc aac      768

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Lys Asn Glu Ile Leu Gln Ser Val Phe Phe Val Ser Pro Ala Ser Asn  
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Val Cys Phe Phe Ala Lys Cys Pro Tyr Met Cys Lys Thr Glu Tyr Ala  
175 180 185 190

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Val Cys Gly Lys Pro His Leu Leu Glu Gly Ser Leu Ser Ala Phe Leu  
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Pro Ser Leu Asn Leu Ala Pro Arg Leu Ser Val Pro Asn Pro Trp Ile  
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cgc tcc tac aca ctg gca gga aaa gag gag tgg gag gtc aat ccc ctt 960  
Arg Ser Tyr Thr Leu Ala Gly Lys Glu Glu Trp Glu Val Asn Pro Leu  
223 228 233 238

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Tyr Cys Asp Thr Val Lys Gln Ile Tyr Pro Tyr Asn Asn Ser Gln Arg  
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Met Asp Arg His His Tyr Glu Met Phe Thr Lys Phe Gly Asp Asp Gly  
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Phe Leu Ile His Leu Asp Asn Ala Arg Gly Phe Gly Arg His Ser His  
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Asp Glu Ile Ser Ile Leu Ser Pro Leu Ser Gln Cys Cys Met Ile Lys  
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aag aaa aca ctt ttg cac ctg cag ctg ctg gcc caa gct gac tac aga 1248  
Lys Lys Thr Leu Leu His Leu Gln Leu Leu Ala Gln Ala Asp Tyr Arg  
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Leu Ser Asp Val Met Arg Glu Ser Leu Leu Glu Asp Gln Leu Ser Pro  
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351 356 361 366

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367 372 377 382

gtc ata gtc gac ggc cca gtg gaa cag tcg gcc cca gac tct ggc cag 1440  
Val Ile Val Asp Gly Pro Val Glu Gln Ser Ala Pro Asp Ser Gly Gln

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Ala Asn Leu Thr Ser *				
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	atg gtc
	Met Val
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att gat ccc ctt cat gtg acc ctg aca cca aag aag ctg aag acc ggc	643
Ile Asp Pro Leu His Val Thr Leu Thr Pro Lys Lys Leu Lys Thr Gly	
3	8
	13
	18

att ggc agc acg gtc atc ctc tcc tgt gcc ctg acg ggc tcc cca gag	691
Ile Gly Ser Thr Val Ile Leu Ser Cys Ala Leu Thr Gly Ser Pro Glu	
19 24 29 34	
ttc acc atc cgc tgg tat cgc aac acg gag ctg gtg ctg cct gac gag	739
Phe Thr Ile Arg Trp Tyr Arg Asn Thr Glu Leu Val Leu Pro Asp Glu	
35 40 45 50	
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Ala Ile Ser Ile Arg Gly Leu Ser Asn Glu Thr Leu Leu Ile Thr Ser	
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Ala Gln Lys Ser His Ser Gly Ala Tyr Gln Cys Phe Ala Thr Arg Lys	
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Ala Gln Thr Ala Gln Asp Phe Ala Ile Ile Ala Leu Glu Asp Gly Thr	
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Pro Arg Ile Val Ser Ser Phe Ser Glu Lys Val Val Asn Pro Gly Glu	
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Gln Phe Ser Leu Met Cys Ala Ala Lys Gly Ala Pro Pro Pro Thr Val	
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Thr Trp Ala Leu Asp Asp Glu Pro Ile Val Arg Asp Gly Ser His Arg	
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Thr Asn Gln Tyr Thr Met Ser Asp Gly Thr Thr Ile Ser His Met Asn	
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Gly Pro Pro Ser Ile Arg Ala Met Arg Asn Ile Thr Ala Val Ala Gly	
195 200 205 210	
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Arg Asp Thr Leu Ile Asn Cys Arg Val Ile Gly Tyr Pro Tyr Tyr Ser	
211 216 221 226	
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Ile Lys Trp Tyr Lys Asp Ala Leu Leu Leu Pro Asp Asn His Arg Gln	
227 232 237 242	
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atg	gat	gag	ggg	gag	tac	ctg	tgc	agt	gtc	ctc	atc	cag	ccc	cag	ctc	1411
Met	Asp	Glu	Gly	Glu	Tyr	Leu	Cys	Ser	Val	Leu	Ile	Gln	Pro	Gln	Leu	
259					264					269					274	
tcc	atc	agc	cag	agc	gtt	cac	gta	gcc	gtc	aaa	gtg	ccc	cct	ctg	atc	1459
Ser	Ile	Ser	Gln	Ser	Val	His	Val	Ala	Val	Lys	Val	Pro	Pro	Leu	Ile	
275					280					285					290	
cag	ccc	ttc	gaa	ttc	cca	ccc	gcc	tcc	atc	ggc	cag	ctg	ctc	tac	att	1507
Gln	Pro	Phe	Glu	Phe	Pro	Pro	Ala	Ser	Ile	Gly	Gln	Leu	Leu	Tyr	Ile	
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ccc	tgt	gtg	gtg	tcc	tcc	ggg	gac	atg	ccc	atc	cgt	atc	acc	tgg	agg	1555
Pro	Cys	Val	Val	Ser	Ser	Gly	Asp	Met	Pro	Ile	Arg	Ile	Thr	Trp	Arg	
307					312					317					322	
aag	gac	gga	cag	gtg	atc	atc	tca	ggc	tcc	ggc	gtg	acc	atc	gag	agc	1603
Lys	Asp	Gly	Gln	Val	Ile	Ile	Ser	Gly	Ser	Gly	Val	Thr	Ile	Glu	Ser	
323					328					333					338	
aag	gaa	ttc	atg	agc	tcc	ctg	cag	atc	tct	agc	gtc	tcc	ctc	aag	cac	1651
Lys	Glu	Phe	Met	Ser	Ser	Leu	Gln	Ile	Ser	Ser	Val	Ser	Leu	Lys	His	
339					344					349					354	
aac	ggc	aac	tat	aca	tgc	atc	gcc	agc	aac	gca	gcc	gcc	acc	gtg	agc	1699
Asn	Gly	Asn	Tyr	Thr	Cys	Ile	Ala	Ser	Asn	Ala	Ala	Ala	Thr	Val	Ser	
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cgg	gag	cgc	cag	ctc	atc	gtg	cgt	gtg	ccc	cct	cga	ttt	gtg	gtg	caa	1747
Arg	Glu	Arg	Gln	Leu	Ile	Val	Arg	Val	Pro	Pro	Arg	Phe	Val	Val	Gln	
371					376					381					386	
ccc	aac	aac	cag	gat	ggc	atc	tac	ggc	aaa	gct	ggg	gtg	ctc	aac	tgc	1795
Pro	Asn	Asn	Gln	Asp	Gly	Ile	Tyr	Gly	Lys	Ala	Gly	Val	Leu	Asn	Cys	
387					392					397					402	
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Ser	Val	Asp	Gly	Tyr	Pro	Pro	Pro	Lys	Val	Met	Trp	Lys	His	Ala	Lys	
403					408					413					418	
ggg	agc	ggg	aac	ccc	cag	cag	tac	cac	cct	gtg	ccc	ctc	act	ggc	cgc	1891
Gly	Ser	Gly	Asn	Pro	Gln	Gln	Tyr	His	Pro	Val	Pro	Leu	Thr	Gly	Arg	
419					424					429					434	
atc	cag	atc	ctg	ccc	aac	agc	tcc	ctg	ctg	atc	cgc	cac	gtc	cta	gaa	1939
Ile	Gln	Ile	Leu	Pro	Asn	Ser	Ser	Leu	Leu	Ile	Arg	His	Val	Leu	Glu	
435					440					445					450	
gag	gac	atc	ggc	tac	tac	ctc	tgc	cag	gcc	agc	aac	ggc	gta	ggc	acc	1987
Glu	Asp	Ile	Gly	Tyr	Tyr	Leu	Cys	Gln	Ala	Ser	Asn	Gly	Val	Gly	Thr	
451					456					461					466	
gac	atc	agc	aag	tcc	atg	ttc	ctc	aca	gtc	aag	atc	ccg	gcc	atg	atc	2035
Asp	Ile	Ser	Lys	Ser	Met	Phe	Leu	Thr	Val	Lys	Ile	Pro	Ala	Met	Ile	



467	472	477	482	
act tcc cac ccc aac acc acc atc gcc atc aag ggc cat gcg aag gag				2083
Thr Ser His Pro Asn Thr Thr Ile Ala Ile Lys Gly His Ala Lys Glu				
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cta aac tgc acg gca cgg ggt gag cgg ccc atc atc atc cgc tgg gag				2131
Leu Asn Cys Thr Ala Arg Gly Glu Arg Pro Ile Ile Ile Arg Trp Glu				
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Lys Gly Asp Thr Val Ile Asp Pro Asp Arg Val Met Arg Tyr Ala Ile				
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gcc acc aag gac aac ggc gac gag gtc gtc tcc aca ctg aag ctc aag				2227
Ala Thr Lys Asp Asn Gly Asp Glu Val Val Ser Thr Leu Lys Leu Lys				
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ccc gct gac cgt ggg gac tct gtg ttc ttc agc tgc cat gcc atc aac				2275
Pro Ala Asp Arg Gly Asp Ser Val Phe Phe Ser Cys His Ala Ile Asn				
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tcg tat ggg gag gac cgg ggc ttg atc caa ctc act gtg caa gag ccc				2323
Ser Tyr Gly Glu Asp Arg Gly Leu Ile Gln Leu Thr Val Gln Glu Pro				
563	568	573	578	
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Pro Asp Pro Pro Glu Leu Glu Ile Arg Glu Val Lys Ala Arg Ser Met				
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Asn Leu Arg Trp Thr Gln Arg Phe Asp Gly Asn Ser Ile Ile Thr Gly				
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Phe Asp Ile Glu Tyr Lys Asn Lys Ser Asp Ser Trp Asp Phe Lys Gln				
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tcc aca cgc aac atc tcc ccc acc atc aac cag gcc aac att gtg gac				2515
Ser Thr Arg Asn Ile Ser Pro Thr Ile Asn Gln Ala Asn Ile Val Asp				
627	632	637	642	
ttg cac ccg gca tct gtg tac agc atc cgc atg tac tct ttc aac aag				2563
Leu His Pro Ala Ser Val Tyr Ser Ile Arg Met Tyr Ser Phe Asn Lys				
643	648	653	658	
att ggc cgc agt gaa cca agc aag gag ctc acc atc agc act gag gag				2611
Ile Gly Arg Ser Glu Pro Ser Lys Glu Leu Thr Ile Ser Thr Glu Glu				
659	664	669	674	
gcc gct ccc gat ggg ccc ccc atg gat gtt acc ttg cag cca gtg acc				2659
Ala Ala Pro Asp Gly Pro Pro Met Asp Val Thr Leu Gln Pro Val Thr				
675	680	685	690	
tca cag agc atc cag gtg acc tgg aag gca ccc aag aag gag ctg cag				2707
Ser Gln Ser Ile Gln Val Thr Trp Lys Ala Pro Lys Lys Glu Leu Gln				
691	696	701	706	

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Leu His His Pro Thr Leu Ile Gln Ser Thr Gly Pro Leu Ile Asp Met				
1395	1400	1405	1410	
tct gac atc cgg cca gga acc aat cca gtg tcc agg aag aat gtg aag				4867
Ser Asp Ile Arg Pro Gly Thr Asn Pro Val Ser Arg Lys Asn Val Lys				
1411	1416	1421	1426	
tca gcc cac agc acc cgg aac cgg tac tca agc cag tgg acc ctg acc				4915
Ser Ala His Ser Thr Arg Asn Arg Tyr Ser Ser Gln Trp Thr Leu Thr				
1427	1432	1437	1442	
aag tgc cag gcc tcc aca cct gcc cgc acc ctc acc tcc gac tgg cgc				4963
Lys Cys Gln Ala Ser Thr Pro Ala Arg Thr Leu Thr Ser Asp Trp Arg				
1443	1448	1453	1458	
acc gtg ggc tcc cag cat ggt gtc acg gtc act gag agt gac agc tac				5011
Thr Val Gly Ser Gln His Gly Val Thr Val Thr Glu Ser Asp Ser Tyr				
1459	1464	1469	1474	
agt gcc agc ctg tcc cag gac aca gac aaa gga agg aac agc atg gtg				5059
Ser Ala Ser Leu Ser Gln Asp Thr Asp Lys Gly Arg Asn Ser Met Val				
1475	1480	1485	1490	
tcc act gag agt gcc tct tcc acc tac gag gag ctg gcc cgg gcc tat				5107
Ser Thr Glu Ser Ala Ser Ser Thr Tyr Glu Glu Leu Ala Arg Ala Tyr				
1491	1496	1501	1506	
gag cat gcc aag ctg gag gag cag ctg cag cac gcc aag ttt gag atc				5155
Glu His Ala Lys Leu Glu Glu Gln Leu Gln His Ala Lys Phe Glu Ile				
1507	1512	1517	1522	
acc gag tgc ttc atc tct gac agt tcc tct gac cag atg acc aca ggc				5203
Thr Glu Cys Phe Ile Ser Asp Ser Ser Ser Asp Gln Met Thr Thr Gly				
1523	1528	1533	1538	
acc aac gag aac gcc gac agc atg aca tcc atg agc aca ccc tca gag				5251
Thr Asn Glu Asn Ala Asp Ser Met Thr Ser Met Ser Thr Pro Ser Glu				
1539	1544	1549	1554	
cct ggc atc tgc cgc ttt acc gcc tca cca ccc aag ccc cag gat gcg				5299
Pro Gly Ile Cys Arg Phe Thr Ala Ser Pro Pro Lys Pro Gln Asp Ala				
1555	1560	1565	1570	
gac cgg ggc aaa aac gtg gct gtg ccc atc cct cac cgg gcc aac aag				5347
Asp Arg Gly Lys Asn Val Ala Val Pro Ile Pro His Arg Ala Asn Lys				
1571	1576	1581	1586	
agt gac tac tgc aac ctg ccc ctg tat gcc aag tca gag gcc ttc ttt				5395
Ser Asp Tyr Cys Asn Leu Pro Leu Tyr Ala Lys Ser Glu Ala Phe Phe				
1587	1592	1597	1602	
cga aag gca gat gga cgt gag ccc tgc ccc gtg gtc cca ccc cgt gag				5443
Arg Lys Ala Asp Gly Arg Glu Pro Cys Pro Val Val Pro Pro Arg Glu				
1603	1608	1613	1618	

gcc tcc atc cgg aac ctg gct cga acc tac cac acc cag gct cgc cac	5491
Ala Ser Ile Arg Asn Leu Ala Arg Thr Tyr His Thr Gln Ala Arg His	
1619                      1624                      1629                      1634	
ctg acc ctg gac cct gcc agc aag tcc ttg ggc ctt ccc cac cca ggg	5539
Leu Thr Leu Asp Pro Ala Ser Lys Ser Leu Gly Leu Pro His Pro Gly	
1635                      1640                      1645                      1650	
gcc ccc gct gcc gcc tcc aca gcc acc tta cct cag agg act ctg gcc	5587
Ala Pro Ala Ala Ala Ser Thr Ala Thr Leu Pro Gln Arg Thr Leu Ala	
1651                      1656                      1661                      1666	
atg cca gcc ccc cca gcc ggc aca gcc ccc cca gcc ccc ggc ccc acc	5635
Met Pro Ala Pro Pro Ala Gly Thr Ala Pro Pro Ala Pro Gly Pro Thr	
1667                      1672                      1677                      1682	
cct gct gag cca ccc acc gcc ccc agc gct gcc cct ccg gcc ccc agc	5683
Pro Ala Glu Pro Pro Thr Ala Pro Ser Ala Ala Pro Pro Ala Pro Ser	
1683                      1688                      1693                      1698	
acc gag cct cca cga gcc ggg ggc cca cac acc aaa atg ggg ggc tcc	5731
Thr Glu Pro Pro Arg Ala Gly Gly Pro His Thr Lys Met Gly Gly Ser	
1699                      1704                      1709                      1714	
agg gac tcg ctt ctc gag atg agc aca tcg ggg gta ggg agg tct cag	5779
Arg Asp Ser Leu Leu Glu Met Ser Thr Ser Gly Val Gly Arg Ser Gln	
1715                      1720                      1725                      1730	
aag cag ggg gcc ggg gcc tac tcc aaa tcc tac acc ctg gtg tag	5824
Lys Gln Gly Ala Gly Ala Tyr Ser Lys Ser Tyr Thr Leu Val *	
1731                      1736                      1741	

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cgcccggtgt ggactgttta ttgggggttag cctgaagcc agaattctca gatcttttct	120
tttgtgtcag ttatgttctt cagaaatggt ttttcattct cctgctggc agcgctgttc	180

ataag	atg att gtg gac agg cag tat atg ggc gtg tct aag cgg aag	227
	Met Ile Val Asp Arg Gln Tyr Met Gly Val Ser Lys Arg Lys	
	1 5 10	
tgc atc gtg tgg ggt gtc gcc ttc ttg tcc gat ggc act atc ata agt	275	
Cys Ile Val Trp Gly Val Ala Phe Leu Ser Asp Gly Thr Ile Ile Ser		
15 20 25 30		
gtg gac tct gct ggg aag gtg cag ttc tgg gac tca gcc act ggg acg	323	
Val Asp Ser Ala Gly Lys Val Gln Phe Trp Asp Ser Ala Thr Gly Thr		
31 36 41 46		
ctt gtg aag agc cat ctc atc gct aat gct gac gtg cag tcc att gct	371	
Leu Val Lys Ser His Leu Ile Ala Asn Ala Asp Val Gln Ser Ile Ala		
47 52 57 62		
gta gct gac ttt ttc cca ggt cat gag tct cgg gct aca gaa gct ttg	419	
Val Ala Asp Phe Phe Pro Gly His Glu Ser Arg Ala Thr Glu Ala Leu		
63 68 73 78		
tgc tgg gca gaa gga cag cga ctc ttt agt gct ggg ctc aat ggc gag	467	
Cys Trp Ala Glu Gly Gln Arg Leu Phe Ser Ala Gly Leu Asn Gly Glu		
79 84 89 94		
att atg gag tat gat tta cag gcg tta aac atc aag tat gct atg gat	515	
Ile Met Glu Tyr Asp Leu Gln Ala Leu Asn Ile Lys Tyr Ala Met Asp		
95 100 105 110		
gcc ttt gga gga cct att tgg agc atg gct gcc agc ccc agt ggc tct	563	
Ala Phe Gly Gly Pro Ile Trp Ser Met Ala Ala Ser Pro Ser Gly Ser		
111 116 121 126		
caa ctt ttg gtt ggt tgt gaa gat gga tct gtg aaa cta ttt caa att	611	
Gln Leu Leu Val Gly Cys Glu Asp Gly Ser Val Lys Leu Phe Gln Ile		
127 132 137 142		
acc cca gac aaa atc cag ttt gaa aga aat ttt gat cgg cag aaa agt	659	
Thr Pro Asp Lys Ile Gln Phe Glu Arg Asn Phe Asp Arg Gln Lys Ser		
143 148 153 158		
cgc atc ctg agt ctc agc tgg cat ccc tct ggt acc cac att gca gct	707	
Arg Ile Leu Ser Leu Ser Trp His Pro Ser Gly Thr His Ile Ala Ala		
159 164 169 174		
ggt tcc ata gac tac att agt gtg ttt gat gtc aaa tca ggc agc gct	755	
Gly Ser Ile Asp Tyr Ile Ser Val Phe Asp Val Lys Ser Gly Ser Ala		
175 180 185 190		
gtt cat aag atg att gtg gac agg cag tat atg ggc gtg tct aag cgg	803	
Val His Lys Met Ile Val Asp Arg Gln Tyr Met Gly Val Ser Lys Arg		
191 196 201 206		
aag tgc atc gtg tgg ggt gtc gcc ttc ttg tcc gat ggc act atc ata	851	
Lys Cys Ile Val Trp Gly Val Ala Phe Leu Ser Asp Gly Thr Ile Ile		
207 212 217 222		

agt gtg gac tct gct ggg aag gtg cag ttc tgg gac tca gcc act ggg	899
Ser Val Asp Ser Ala Gly Lys Val Gln Phe Trp Asp Ser Ala Thr Gly	
223 228 233 238	
acg ctt gtg aag agc cat ctc atc gct aat gct gac gtg cag tcc att	947
Thr Leu Val Lys Ser His Leu Ile Ala Asn Ala Asp Val Gln Ser Ile	
239 244 249 254	
gct gta gct gac caa gaa gac agt ttc gtg gtg ggc aca gcc gag gga	995
Ala Val Ala Asp Gln Glu Asp Ser Phe Val Val Gly Thr Ala Glu Gly	
255 260 265 270	
aca gtc ttc cat ttt cag ctg gtc cct gtg aca tct aac agc agt gag	1043
Thr Val Phe His Phe Gln Leu Val Pro Val Thr Ser Asn Ser Ser Glu	
271 276 281 286	
aag cag tgg gtg cgg aca aaa ccg ttc cag cat cac act cat gac gtg	1091
Lys Gln Trp Val Arg Thr Lys Pro Phe Gln His His Thr His Asp Val	
287 292 297 302	
cgc act gtg gcc cac agc cca aca gcg ctg ata tct gga ggc act gac	1139
Arg Thr Val Ala His Ser Pro Thr Ala Leu Ile Ser Gly Gly Thr Asp	
303 308 313 318	
acc cac tta gtc ttt cgt cct ctc atg gag aag gtg gaa gta aag aat	1187
Thr His Leu Val Phe Arg Pro Leu Met Glu Lys Val Glu Val Lys Asn	
319 324 329 334	
tac gat gcc gct ctc cga aaa atc acc ttt cac cac cga tgt ctc atc	1235
Tyr Asp Ala Ala Leu Arg Lys Ile Thr Phe His His Arg Cys Leu Ile	
335 340 345 350	
tcc tgt tct aaa aag agg cag ctt ctc ctc ttc cag ttt gct cat cac	1283
Ser Cys Ser Lys Lys Arg Gln Leu Leu Leu Phe Gln Phe Ala His His	
351 356 361 366	
tta gaa ctt tgg cga ctg gga tcc aca gtt gca aca ggc aag aat ggg	1331
Leu Glu Leu Trp Arg Leu Gly Ser Thr Val Ala Thr Gly Lys Asn Gly	
367 372 377 382	
gat act ctt cca ctc tct aaa aat gca gat cat tta ctg cac cta aag	1379
Asp Thr Leu Pro Leu Ser Lys Asn Ala Asp His Leu Leu His Leu Lys	
383 388 393 398	
aca aag ggt cct gag aac att atc tgt agc tgt atc tcc cca tgt gga	1427
Thr Lys Gly Pro Glu Asn Ile Ile Cys Ser Cys Ile Ser Pro Cys Gly	
399 404 409 414	
agt tgg ata gcc tat tct aca gtt tct cgg ttt ttt ctc tat cgg ctg	1475
Ser Trp Ile Ala Tyr Ser Thr Val Ser Arg Phe Phe Leu Tyr Arg Leu	
415 420 425 430	
aat tat gaa cat gac aac ata agc ctc aaa agg gtt tcc aaa atg cca	1523
Asn Tyr Glu His Asp Asn Ile Ser Leu Lys Arg Val Ser Lys Met Pro	
431 436 441 446	
gca ttc ctt cgc tct gcc ctt cag att ttg ttt tct gaa gat tca aca	1571



Ala Phe Leu Arg Ser Ala Leu Gln Ile Leu Phe Ser Glu Asp Ser Thr	
447 452 457 462	
aag ctc ttt gta gca tca aat caa gga gct ctg cat att gtt cag ctg	1619
Lys Leu Phe Val Ala Ser Asn Gln Gly Ala Leu His Ile Val Gln Leu	
463 468 473 478	
tca gga gga agc ttc aag cac ctg cat gct ttc cag cct cag tca gga	1667
Ser Gly Gly Ser Phe Lys His Leu His Ala Phe Gln Pro Gln Ser Gly	
479 484 489 494	
aca gtg gag gcc atg tgt ctt ttg gca gtc agt cca gat ggg aat tgg	1715
Thr Val Glu Ala Met Cys Leu Leu Ala Val Ser Pro Asp Gly Asn Trp	
495 500 505 510	
cta gct gca tca ggt acc agt gct gga gtc cat gtc tac aac gta aaa	1763
Leu Ala Ala Ser Gly Thr Ser Ala Gly Val His Val Tyr Asn Val Lys	
511 516 521 526	
cag cta aag ctt cac tgc acg gtg cct gct tac aat ttc cca gtg act	1811
Gln Leu Lys Leu His Cys Thr Val Pro Ala Tyr Asn Phe Pro Val Thr	
527 532 537 542	
gct atg gct att gcc ccc aat acc aac aac ctt gtc atc gct cat tcg	1859
Ala Met Ala Ile Ala Pro Asn Thr Asn Asn Leu Val Ile Ala His Ser	
543 548 553 558	
gac cag cag gta ttt gag tac agc atc cca gac aaa cag tat aca gat	1907
Asp Gln Gln Val Phe Glu Tyr Ser Ile Pro Asp Lys Gln Tyr Thr Asp	
559 564 569 574	
tgg agc cgg act gtc cag aag cag ggc ttt cac cac ctt tgg ctc caa	1955
Trp Ser Arg Thr Val Gln Lys Gln Gly Phe His His Leu Trp Leu Gln	
575 580 585 590	
agg gat act cct atc aca cac atc agt ttt cat ccc aag aga ccg atg	2003
Arg Asp Thr Pro Ile Thr His Ile Ser Phe His Pro Lys Arg Pro Met	
591 596 601 606	
cac atc ctt ctc cat gat gcc tac atg ttc tgc atc att gac aag tca	2051
His Ile Leu Leu His Asp Ala Tyr Met Phe Cys Ile Ile Asp Lys Ser	
607 612 617 622	
ttg ccc ctt cca aat gac aaa acc tta ctc tac aat cca ttt cct ccc	2099
Leu Pro Leu Pro Asn Asp Lys Thr Leu Leu Tyr Asn Pro Phe Pro Pro	
623 628 633 638	
acg aat gac atc att gct cag ctc cca cca ccc att aaa aag aag aaa	2147
Thr Asn Asp Ile Ile Ala Gln Leu Pro Pro Pro Ile Lys Lys Lys Lys	
639 644 649 654	
ttt gga acc taa aac agggcactgt ctgtgtcctt ccttgaactg tctaccctgt	2202
Phe Gly Thr *	
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tgcttttcac aaatcatggt aataaaacaa gttattcttg aaaaaaaaaa aa	2254

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 Met Ser Gln Leu Arg Leu Leu Pro  
 1 5  
 tcc cgt ctt ggg gta cag gct gcg agg ctc ctg gct gca cat gac gtc 161  
 Ser Arg Leu Gly Val Gln Ala Ala Arg Leu Leu Ala Ala His Asp Val  
 9 14 19 24  
 ccg gtg ttt ggc tgg cgc agc agg tcc tcc ggg cca ccg gcc acc ttc 209  
 Pro Val Phe Gly Trp Arg Ser Arg Ser Ser Gly Pro Pro Ala Thr Phe  
 25 30 35 40  
 cca agc agc aaa ggt gga ggc ggc tcc agt tac atg gag gag atg tac 257  
 Pro Ser Ser Lys Gly Gly Gly Gly Ser Ser Tyr Met Glu Glu Met Tyr  
 41 46 51 56  
 ttc gcc tgg ttg gaa aac ccc cag agt gtc cac aag tcc tgg gac agc 305  
 Phe Ala Trp Leu Glu Asn Pro Gln Ser Val His Lys Ser Trp Asp Ser  
 57 62 67 72  
 ttc ttc agg gaa gcc agc gag gaa gcc ttt tct ggc tct gct cag cca 353  
 Phe Phe Arg Glu Ala Ser Glu Glu Ala Phe Ser Gly Ser Ala Gln Pro  
 73 78 83 88  
 cgg ccc cct tct gtt gtc cat gag agc agg tct gca gtc tca agt cgg 401  
 Arg Pro Pro Ser Val Val His Glu Ser Arg Ser Ala Val Ser Ser Arg  
 89 94 99 104  
 acc aag acc agc aaa ttg gtg gag gac cac ctg gct gtg cag tcc ctg 449  
 Thr Lys Thr Ser Lys Leu Val Glu Asp His Leu Ala Val Gln Ser Leu  
 105 110 115 120  
 atc cgg gcc tac cag atc cgg ggt cac cat gtg gcc cag ctg gac ccc 497  
 Ile Arg Ala Tyr Gln Ile Arg Gly His His Val Ala Gln Leu Asp Pro  
 121 126 131 136  
 ctg ggc att ctg gat gca gac ctg gac tcc ttt gtg ccc tca gac ttg 545  
 Leu Gly Ile Leu Asp Ala Asp Leu Asp Ser Phe Val Pro Ser Asp Leu  
 137 142 147 152  
 atc aca acc att gat aaa ctg gcc ttc tat gac ctt cag gag gct gac 593  
 Ile Thr Thr Ile Asp Lys Leu Ala Phe Tyr Asp Leu Gln Glu Ala Asp

153	158	163	168	
ctt gat aag gag ttc cag ctg ccg aca acc acc ttc att ggg ggc tct				641
Leu Asp Lys Glu Phe Gln Leu Pro Thr Thr Thr Phe Ile Gly Gly Ser				
169	174	179	184	
gaa aac acc ctt tct ctg cgg gag atc att cgg cgc ctg gag aac acc				689
Glu Asn Thr Leu Ser Leu Arg Glu Ile Ile Arg Arg Leu Glu Asn Thr				
185	190	195	200	
tac tgc cag cac att ggc ctg gag ttc atg ttc atc aac gat gtg gag				737
Tyr Cys Gln His Ile Gly Leu Glu Phe Met Phe Ile Asn Asp Val Glu				
201	206	211	216	
cag tgc cag tgg atc cgg cag aag ttt gag acc cct ggt gtg atg cag				785
Gln Cys Gln Trp Ile Arg Gln Lys Phe Glu Thr Pro Gly Val Met Gln				
217	222	227	232	
ttc tcc agc gag gag aag cgg acc ctg ctg gcc cgg cta gtg cgc tcc				833
Phe Ser Ser Glu Glu Lys Arg Thr Leu Leu Ala Arg Leu Val Arg Ser				
233	238	243	248	
atg agg ttt gaa gac ttc ctg gcc cgg aaa tgg tcc tca gag aag cgg				881
Met Arg Phe Glu Asp Phe Leu Ala Arg Lys Trp Ser Ser Glu Lys Arg				
249	254	259	264	
ttt ggc ctg gag ggc tgt gaa gtg atg att cct gcc ctc aag acc atc				929
Phe Gly Leu Glu Gly Cys Glu Val Met Ile Pro Ala Leu Lys Thr Ile				
265	270	275	280	
atc gac aaa tcc agc gag atg ggg att gag aat gtc atc ttg ggg atg				977
Ile Asp Lys Ser Ser Glu Met Gly Ile Glu Asn Val Ile Leu Gly Met				
281	286	291	296	
cca cac agg gga agg ctg aac gtg ctg gcc aac gtg atc cgc aag gac				1025
Pro His Arg Gly Arg Leu Asn Val Leu Ala Asn Val Ile Arg Lys Asp				
297	302	307	312	
ctg gag cag atc ttc tgc cgg ttt gac ccc aag ctg gag gcg gcg gac				1073
Leu Glu Gln Ile Phe Cys Arg Phe Asp Pro Lys Leu Glu Ala Ala Asp				
313	318	323	328	
gag ggc tcc ggg gat gtc aag tac cac ctg ggc atg tac cat gag agg				1121
Glu Gly Ser Gly Asp Val Lys Tyr His Leu Gly Met Tyr His Glu Arg				
329	334	339	344	
atc aac cgc gtc acc aac cgg aac atc act ctg tgc ctg gtt gcc aac				1169
Ile Asn Arg Val Thr Asn Arg Asn Ile Thr Leu Ser Leu Val Ala Asn				
345	350	355	360	
ccc tcc cac ctg gag gca gtg gac cct gtg gtg cag ggg aag aca aag				1217
Pro Ser His Leu Glu Ala Val Asp Pro Val Val Gln Gly Lys Thr Lys				
361	366	371	376	
gca gag cag ttc tac cgt gga gat gcc cag ggc aag aag gtc atg tcc				1265
Ala Glu Gln Phe Tyr Arg Gly Asp Ala Gln Gly Lys Lys Val Met Ser				
377	382	387	392	

atc ctg gtt cat ggg gac gcc gcc ttt gct ggc cag ggc gtg gta tat	1313
Ile Leu Val His Gly Asp Ala Ala Phe Ala Gly Gln Gly Val Val Tyr	
393 398 403 408	
gag acc ttc cac ctg agc gac ctg ccc tcc tac acg acc aat ggt acc	1361
Glu Thr Phe His Leu Ser Asp Leu Pro Ser Tyr Thr Thr Asn Gly Thr	
409 414 419 424	
gtg cac gtc gtc gtc aac aac cag att gga ttc acc aca gac ccc cga	1409
Val His Val Val Val Asn Asn Gln Ile Gly Phe Thr Thr Asp Pro Arg	
425 430 435 440	
atg gcc cgc tcc tca cca tac ccg acc gac gtg gcc cgg gtg gtc aat	1457
Met Ala Arg Ser Ser Pro Tyr Pro Thr Asp Val Ala Arg Val Val Asn	
441 446 451 456	
gcg cct atc ttc cat gtg aat gcc gat gac cca gag gct gtg ata tat	1505
Ala Pro Ile Phe His Val Asn Ala Asp Asp Pro Glu Ala Val Ile Tyr	
457 462 467 472	
gtg tgc agt gtg gca gcc gaa tgg aga aac act ttc aac aaa gat gtt	1553
Val Cys Ser Val Ala Ala Glu Trp Arg Asn Thr Phe Asn Lys Asp Val	
473 478 483 488	
gtc gtg gac ctg gtc tgt tac cgc cgg cgt ggc cac aat gag atg gac	1601
Val Val Asp Leu Val Cys Tyr Arg Arg Arg Gly His Asn Glu Met Asp	
489 494 499 504	
gag ccc atg ttc acc cag ccg ctc atg tac aag cag atc cac aga cag	1649
Glu Pro Met Phe Thr Gln Pro Leu Met Tyr Lys Gln Ile His Arg Gln	
505 510 515 520	
gtg cct gtg ctg aag aag tac gca gac aag ctg att gcc gag ggc aca	1697
Val Pro Val Leu Lys Lys Tyr Ala Asp Lys Leu Ile Ala Glu Gly Thr	
521 526 531 536	
gtc acc ctg cag gag ttt gag gaa gaa att gcc aaa tac gac cgg atc	1745
Val Thr Leu Gln Glu Phe Glu Glu Glu Ile Ala Lys Tyr Asp Arg Ile	
537 542 547 552	
tgt gag gag gct tat ggc agg tcc aag gat aaa aag att ctg cat ata	1793
Cys Glu Glu Ala Tyr Gly Arg Ser Lys Asp Lys Lys Ile Leu His Ile	
553 558 563 568	
aag cac tgg ttg gac tcc ccc tgg cct ggc ttc ttc aac gta gat ggg	1841
Lys His Trp Leu Asp Ser Pro Trp Pro Gly Phe Phe Asn Val Asp Gly	
569 574 579 584	
gag ccc aag agc atg aca tgc cca gcc acg ggg atc cct gag gac atg	1889
Glu Pro Lys Ser Met Thr Cys Pro Ala Thr Gly Ile Pro Glu Asp Met	
585 590 595 600	
ctc acc cac atc ggc agt gtg gcc agc tct gtg ccc ctg gag gac ttt	1937
Leu Thr His Ile Gly Ser Val Ala Ser Ser Val Pro Leu Glu Asp Phe	
601 606 611 616	

aag atc cac act ggc ctc tct cgc att ctg cgg ggc cgt gcg gac atg	1985
Lys Ile His Thr Gly Leu Ser Arg Ile Leu Arg Gly Arg Ala Asp Met	
617 622 627 632	
acc aag aac cgg acg gtg gac tgg gcg ttg gca gag tac atg gcc ttt	2033
Thr Lys Asn Arg Thr Val Asp Trp Ala Leu Ala Glu Tyr Met Ala Phe	
633 638 643 648	
ggc tcc ctg ctg aag gaa ggc atc cac gtg cgg ctc agc ggg cag gat	2081
Gly Ser Leu Leu Lys Glu Gly Ile His Val Arg Leu Ser Gly Gln Asp	
649 654 659 664	
gtg gag agg ggc aca ttc agt cac cgg cac cat gtt ctc cat gac cag	2129
Val Glu Arg Gly Thr Phe Ser His Arg His His Val Leu His Asp Gln	
665 670 675 680	
gag gtt gac cgc agg acg tgt gtg cct atg aat cat ctc tgg cct gac	2177
Glu Val Asp Arg Arg Thr Cys Val Pro Met Asn His Leu Trp Pro Asp	
681 686 691 696	
cag gcc ccg tac acc gtg tgc aac agc tcc ctc tcg gag tac gga gtc	2225
Gln Ala Pro Tyr Thr Val Cys Asn Ser Ser Leu Ser Glu Tyr Gly Val	
697 702 707 712	
ctg ggc ttt gag ctg ggc tat gcc atg gcc agc ccc aat gcc ctg gtc	2273
Leu Gly Phe Glu Leu Gly Tyr Ala Met Ala Ser Pro Asn Ala Leu Val	
713 718 723 728	
ctc tgg gag gcc cag ttt ggg gac ttc cac aac acg gcc cag tgc atc	2321
Leu Trp Glu Ala Gln Phe Gly Asp Phe His Asn Thr Ala Gln Cys Ile	
729 734 739 744	
atc gac cag ttc atc agc acc ggc cag gcc aag tgg gtg cgg cat aat	2369
Ile Asp Gln Phe Ile Ser Thr Gly Gln Ala Lys Trp Val Arg His Asn	
745 750 755 760	
ggc att gtg ctg ctg ctg ccc cat ggc atg gaa ggc atg ggc cca gag	2417
Gly Ile Val Leu Leu Leu Pro His Gly Met Glu Gly Met Gly Pro Glu	
761 766 771 776	
cac tcg tca gcg agg ccc gaa agg ttc ctg cag atg agc aat gat gac	2465
His Ser Ser Ala Arg Pro Glu Arg Phe Leu Gln Met Ser Asn Asp Asp	
777 782 787 792	
tcg gat gcc tac cct gca ttc acc aag gac ttc gag gtg agc cag ctc	2513
Ser Asp Ala Tyr Pro Ala Phe Thr Lys Asp Phe Glu Val Ser Gln Leu	
793 798 803 808	
tat gac tgc aac tgg atc gtg gtc aac tgc tcc aca ccg gcc aac tac	2561
Tyr Asp Cys Asn Trp Ile Val Val Asn Cys Ser Thr Pro Ala Asn Tyr	
809 814 819 824	
ttc cac gtg ctg cgc cgg cag atc ctg ctg ccc ttc cgc aag ccg ctg	2609
Phe His Val Leu Arg Arg Gln Ile Leu Leu Pro Phe Arg Lys Pro Leu	
825 830 835 840	
att atc ttc aca cct aaa tct ctg ctg agg cac cca gag gcc aag tcc	2657

Ile Ile Phe Thr Pro Lys Ser Leu Leu Arg His Pro Glu Ala Lys Ser	
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Leu Ser Thr Ala Arg Ala Gly Pro Phe Ser Ser Arg Ser Asn Val Thr  
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Leu Pro Ala Pro Arg Pro Pro Pro Gln Pro Gly Gly His Thr Val Gly  
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Thr Arg Thr Cys Pro Arg Asp Cys Arg Gly Arg Gly Arg Cys Glu Asp							
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Pro Glu Ser Pro Glu Glu Pro Leu Leu Gly Glu Leu Thr Val Thr Gly	
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tcc tcc cct gat tcg ctg agc ctc ttc tgg acc gtc ccc cag ggc agc	5088
Ser Ser Pro Asp Ser Leu Ser Leu Phe Trp Thr Val Pro Gln Gly Ser	
1681 1686 1691 1696	
ttc gac tct ttc acc gtg cag tac aag gac agg gat ggg cgg ccc cgg	5136
Phe Asp Ser Phe Thr Val Gln Tyr Lys Asp Arg Asp Gly Arg Pro Arg	
1697 1702 1707 1712	
gcg gtg cgt gtt ggg ggc aag gag agt gag gtc acc gtg gga ggc cta	5184
Ala Val Arg Val Gly Gly Lys Glu Ser Glu Val Thr Val Gly Gly Leu	
1713 1718 1723 1728	
gag ccc ggg cac aag tac aag atg cac ctg tac ggc ctc cac gag ggg	5232
Glu Pro Gly His Lys Tyr Lys Met His Leu Tyr Gly Leu His Glu Gly	
1729 / 1734 1739 1744	
cag cgc gtg ggc ccg gtg tcc gcc gtg ggc gtg aca ggg acc cac act	5280

Gln Arg Val Gly Pro Val Ser Ala Val Gly Val Thr Gly Thr His Thr	
1745 1750 1755 1760	
ggg ctc tgt gag gcc ctg tgc ctg gtc cct ggg atg agg ccc ttt agg	5328
Gly Leu Cys Glu Ala Leu Cys Leu Val Pro Gly Met Arg Pro Phe Arg	
1761 1766 1771 1776	
aaa gaa atg ggc atc agt gcg cat tat cag agc agc aaa agg acg aag	5376
Lys Glu Met Gly Ile Ser Ala His Tyr Gln Ser Ser Lys Arg Thr Lys	
1777 1782 1787 1792	
cag ctg gag tcc gcc aag ctg ggg gct gtg tct ggc agc aca cac agt	5424
Gln Leu Glu Ser Ala Lys Leu Gly Ala Val Ser Gly Ser Thr His Ser	
1793 1798 1803 1808	
gca gtt gcc agg ggg aga gcc tca gac acc gag cag gga cct agt gaa	5472
Ala Val Ala Arg Gly Arg Ala Ser Asp Thr Glu Gln Gly Pro Ser Glu	
1809 1814 1819 1824	
gga ctg ttg acc aga cag atg ttc aga tca atg cgc ttt tac atc aaa	5520
Gly Leu Leu Thr Arg Gln Met Phe Arg Ser Met Arg Phe Tyr Ile Lys	
1825 1830 1835 1840	
acc atc atg cgg gtt cca caa atg caa cag aca tcg ctg gcc cca caa	5568
Thr Ile Met Arg Val Pro Gln Met Gln Gln Thr Ser Leu Ala Pro Gln	
1841 1846 1851 1856	
caa gaa gag acc cct cca gcc act gag tcc ccg ctg gag cca cgc cta	5616
Gln Glu Glu Thr Pro Pro Ala Thr Glu Ser Pro Leu Glu Pro Arg Leu	
1857 1862 1867 1872	
gga gag ctg aca gtg aca gat gtg acc ccc aac tct gtg ggc ctc tcc	5664
Gly Glu Leu Thr Val Thr Asp Val Thr Pro Asn Ser Val Gly Leu Ser	
1873 1878 1883 1888	
tgg aca gtc ccc gag ggc cag ttt gac tcc ttc ata gtc cag tac aag	5712
Trp Thr Val Pro Glu Gly Gln Phe Asp Ser Phe Ile Val Gln Tyr Lys	
1889 1894 1899 1904	
gac aag gac ggg cag ccc cag gtg gtg ccg gtg gcg gca gac cag cga	5760
Asp Lys Asp Gly Gln Pro Gln Val Val Pro Val Ala Ala Asp Gln Arg	
1905 1910 1915 1920	
gag gtc aca gtc tac aac ctg gag cct gag aga aaa tat aag atg aac	5808
Glu Val Thr Val Tyr Asn Leu Glu Pro Glu Arg Lys Tyr Lys Met Asn	
1921 1926 1931 1936	
atg tat gga cta cat gat ggg caa cgc atg ggc ccc ctg tct gtg gtc	5856
Met Tyr Gly Leu His Asp Gly Gln Arg Met Gly Pro Leu Ser Val Val	
1937 1942 1947 1952	
atc gtg acg gcc cca gcc aca gag gcc tcc aag cct ccc ctg gag cca	5904
Ile Val Thr Ala Pro Ala Thr Glu Ala Ser Lys Pro Pro Leu Glu Pro	
1953 1958 1963 1968	
cgc cta ggg gag ctg aca gtg acg gat ata acc cct gac tct gtg ggc	5952
Arg Leu Gly Glu Leu Thr Val Thr Asp Ile Thr Pro Asp Ser Val Gly	

1969	1974	1979	1984
ctc tca tgg aca gtc cct gag ggt gaa ttc gac tcc ttt gtg gtt cag Leu Ser Trp Thr Val Pro Glu Gly Glu Phe Asp Ser Phe Val Val Gln 1985 1990 1995 2000			6000
tac aag gac agg gac ggg cag ccc cag gtg gtg ccc gtg gct gca gat Tyr Lys Asp Arg Asp Gly Gln Pro Gln Val Val Pro Val Ala Ala Asp 2001 2006 2011 2016			6048
cag cgg gag gtc act atc cct gac ctg gaa ccc tcc cgc aag tac aag Gln Arg Glu Val Thr Ile Pro Asp Leu Glu Pro Ser Arg Lys Tyr Lys 2017 2022 2027 2032			6096
ttc ctg ctc ttt ggg atc cag gat ggg aaa cga cgc agc cca gtc tct Phe Leu Leu Phe Gly Ile Gln Asp Gly Lys Arg Arg Ser Pro Val Ser 2033 2038 2043 2048			6144
gtg gag gca aag acg gtt gcc cga ggt gac gcc agc cca ggg gcc cca Val Glu Ala Lys Thr Val Ala Arg Gly Asp Ala Ser Pro Gly Ala Pro 2049 2054 2059 2064			6192
ccc cgc ctt ggg gag ctg tgg gtg aca gac ccc acc cca gac tca ctg Pro Arg Leu Gly Glu Leu Trp Val Thr Asp Pro Thr Pro Asp Ser Leu 2065 2070 2075 2080			6240
cgc ctc tcc tgg acg gtt cct gag ggc cag ttc gac tct ttt gtg gtc Arg Leu Ser Trp Thr Val Pro Glu Gly Gln Phe Asp Ser Phe Val Val 2081 2086 2091 2096			6288
cag ttc aag gac aaa gac ggg ccc cag gtg gtg ccc gtg gag ggc cat Gln Phe Lys Asp Lys Asp Gly Pro Gln Val Val Pro Val Glu Gly His 2097 2102 2107 2112			6336
gag cgc tct gtc act gtc acc cct ctg gat gcc ggc cgc aag tac aga Glu Arg Ser Val Thr Val Thr Pro Leu Asp Ala Gly Arg Lys Tyr Arg 2113 2118 2123 2128			6384
ttc ctc ctc tat ggc ctc ctg ggc aag aag cgc cat ggc cct ctc act Phe Leu Leu Tyr Gly Leu Leu Gly Lys Lys Arg His Gly Pro Leu Thr 2129 2134 2139 2144			6432
gcc gac ggc acc acg gaa gcc cgg agt gct atg gat gat act gga aca Ala Asp Gly Thr Thr Glu Ala Arg Ser Ala Met Asp Asp Thr Gly Thr 2145 2150 2155 2160			6480
aag cgt ccc cca aaa ccc cgt ctg ggg gag gag ctg cag gtg acc acc Lys Arg Pro Pro Lys Pro Arg Leu Gly Glu Glu Leu Gln Val Thr Thr 2161 2166 2171 2176			6528
gtg acc cag aac tcc gtg ggc ctc tcc tgg aca gtc cct gag ggc cag Val Thr Gln Asn Ser Val Gly Leu Ser Trp Thr Val Pro Glu Gly Gln 2177 2182 2187 2192			6576
ttt gac tcc ttt gtg gtc cag tac aaa gac agg gac ggg cag ccc cag Phe Asp Ser Phe Val Val Gln Tyr Lys Asp Arg Asp Gly Gln Pro Gln 2193 2198 2203 2208			6624



gtg gtg ccc gtg gag ggc agc ctc agg gag gtc agc gtg ccg ggc ctg	6672
Val Val Pro Val Glu Gly Ser Leu Arg Glu Val Ser Val Pro Gly Leu	
2209 2214 2219 2224	
gac cct gcc cac agg tac aag ctg ctg ctc tac ggg ctg cac cac ggc	6720
Asp Pro Ala His Arg Tyr Lys Leu Leu Leu Tyr Gly Leu His His Gly	
2225 2230 2235 2240	
aag cgt gtg ggc ccc atc tgc gcc gtc gcc att act gcg cct gag ccc	6768
Lys Arg Val Gly Pro Ile Ser Ala Val Ala Ile Thr Ala Pro Glu Pro	
2241 2246 2251 2256	
cac ctc ggg gag ttg aca gtg gag gag gcc acg tca cac acc ctg cat	6816
His Leu Gly Glu Leu Thr Val Glu Glu Ala Thr Ser His Thr Leu His	
2257 2262 2267 2272	
ctc tcc tgg atg gtg act gag gga gaa ttt gac tcc ttc gaa atc cag	6864
Leu Ser Trp Met Val Thr Glu Gly Glu Phe Asp Ser Phe Glu Ile Gln	
2273 2278 2283 2288	
tac aca gat aga gac ggg caa ctc caa atg gtc cgc ata gga ggt gac	6912
Tyr Thr Asp Arg Asp Gly Gln Leu Gln Met Val Arg Ile Gly Gly Asp	
2289 2294 2299 2304	
cgg aat gac atc acc ctc tct ggc ctg gaa tcc gac cac aga tac ctg	6960
Arg Asn Asp Ile Thr Leu Ser Gly Leu Glu Ser Asp His Arg Tyr Leu	
2305 2310 2315 2320	
gtg acc ctg tat ggt ttc agt gat ggg aag cat gta ggt cct gtc cat	7008
Val Thr Leu Tyr Gly Phe Ser Asp Gly Lys His Val Gly Pro Val His	
2321 2326 2331 2336	
gtc gag gcc ctg aca gtc ccg gag gag gag aag cct tca gaa cct ccc	7056
Val Glu Ala Leu Thr Val Pro Glu Glu Glu Lys Pro Ser Glu Pro Pro	
2337 2342 2347 2352	
acc gca acc ccc gag ccc ccc atc aag cct cgc ctg ggg gag ctg acc	7104
Thr Ala Thr Pro Glu Pro Pro Ile Lys Pro Arg Leu Gly Glu Leu Thr	
2353 2358 2363 2368	
gtg aca gat gcc acc cct gac tcc ctc agc ctg tcc tgg aca gtt ccc	7152
Val Thr Asp Ala Thr Pro Asp Ser Leu Ser Leu Ser Trp Thr Val Pro	
2369 2374 2379 2384	
gag gga cag ttt gac cac ttc ctg gtc cag tac agg aat gga gat ggg	7200
Glu Gly Gln Phe Asp His Phe Leu Val Gln Tyr Arg Asn Gly Asp Gly	
2385 2390 2395 2400	
cag ccc aag gca gtg agg gtg cca ggg cac gag gaa ggg gtc acc atc	7248
Gln Pro Lys Ala Val Arg Val Pro Gly His Glu Gly Val Thr Ile	
2401 2406 2411 2416	
tgc gcc ctg gag cca gac cat aaa tac aag atg aac ctg tac ggc ttc	7296
Ser Gly Leu Glu Pro Asp His Lys Tyr Lys Met Asn Leu Tyr Gly Phe	
2417 2422 2427 2432	

cac ggt ggc cag cgc atg ggc cct gtg tct gtc gtc ggg gtg aca gct	7344
His Gly Gly Gln Arg Met Gly Pro Val Ser Val Val Gly Val Thr Ala	
2433 2438 2443 2448	
gca gag gaa gag acc ccc agc ccc aca gaa ccc agc atg gag gcc ccg	7392
Ala Glu Glu Glu Thr Pro Ser Pro Thr Glu Pro Ser Met Glu Ala Pro	
2449 2454 2459 2464	
gag ccc gct gag gag ccg ctc ctg ggg gag cta aca gtg aca gga tcc	7440
Glu Pro Ala Glu Glu Pro Leu Leu Gly Glu Leu Thr Val Thr Gly Ser	
2465 2470 2475 2480	
tcc cct gac tcg ctg agc ctc tcc tgg acc gtc ccc cag ggc cgc ttc	7488
Ser Pro Asp Ser Leu Ser Leu Ser Trp Thr Val Pro Gln Gly Arg Phe	
2481 2486 2491 2496	
gac tcc ttc acc gtg cag tac aag gac agg gac ggg cgg ccc cag gtg	7536
Asp Ser Phe Thr Val Gln Tyr Lys Asp Arg Asp Gly Arg Pro Gln Val	
2497 2502 2507 2512	
gtg cgt gtt ggg ggc gag gag agt gaa gtc acc gtg ggg ggc ctg gag	7584
Val Arg Val Gly Gly Glu Glu Ser Glu Val Thr Val Gly Gly Leu Glu	
2513 2518 2523 2528	
cct ggg cgc aag tac aag atg cac ctg tac ggc ctc cac gag ggg cgg	7632
Pro Gly Arg Lys Tyr Lys Met His Leu Tyr Gly Leu His Glu Gly Arg	
2529 2534 2539 2544	
cgc gtg ggc cca gtg tct gct gtg ggc gtc acg gcc ccc gaa gag gag	7680
Arg Val Gly Pro Val Ser Ala Val Gly Val Thr Ala Pro Glu Glu Glu	
2545 2550 2555 2560	
tcc cct gat gct cct ctt gca aag ctg cgc cta ggg cag atg aca gtg	7728
Ser Pro Asp Ala Pro Leu Ala Lys Leu Arg Leu Gly Gln Met Thr Val	
2561 2566 2571 2576	
aga gac atc acc tcc gac tcc ctc agc ctc tcc tgg aca gtc ccc gag	7776
Arg Asp Ile Thr Ser Asp Ser Leu Ser Leu Ser Trp Thr Val Pro Glu	
2577 2582 2587 2592	
ggc cag ttt gac cat ttc ttg gtc cag ttt aag aat ggg gac ggg cag	7824
Gly Gln Phe Asp His Phe Leu Val Gln Phe Lys Asn Gly Asp Gly Gln	
2593 2598 2603 2608	
ccc aag gcg gtg cgg gtg ccg gga cac gag gat ggg gtc acc atc tcg	7872
Pro Lys Ala Val Arg Val Pro Gly His Glu Asp Gly Val Thr Ile Ser	
2609 2614 2619 2624	
ggc ctg gag cca gac cac aag tac aag atg aac ctg tac ggc ttc cac	7920
Gly Leu Glu Pro Asp His Lys Tyr Lys Met Asn Leu Tyr Gly Phe His	
2625 2630 2635 2640	
ggt ggc cag cgc gtg ggc ccc gtg tct gct gtt ggt tta act gcc cca	7968
Gly Gly Gln Arg Val Gly Pro Val Ser Ala Val Gly Leu Thr Ala Pro	
2641 2646 2651 2656	
gga aag gat gaa gaa atg gcc cca gcc tcg aca gaa cct ccc acc cct	8016



2881	2886	2891	2896	
cct ctc ctg ggg gag ctg aca gtg aca gga tcc tcc cct gac tcg ctg				8736
Pro Leu Leu Gly Glu Leu Thr Val Thr Gly Ser Ser Pro Asp Ser Leu				
2897	2902	2907	2912	
agc ctt tcc tgg acc gtc ccc cag ggc cgc ttt gac tcc ttc acc gtg				8784
Ser Leu Ser Trp Thr Val Pro Gln Gly Arg Phe Asp Ser Phe Thr Val				
2913	2918	2923	2928	
cag tac aag gac agg gac ggg cgg ccc cag gcg gtg cgt gtt ggg ggc				8832
Gln Tyr Lys Asp Arg Asp Gly Arg Pro Gln Ala Val Arg Val Gly Gly				
2929	2934	2939	2944	
cag gag agc aag gtc act gtg agg ggc ctg gag cct ggg cgc aag tac				8880
Gln Glu Ser Lys Val Thr Val Arg Gly Leu Glu Pro Gly Arg Lys Tyr				
2945	2950	2955	2960	
aag atg cac ctg tac ggc ctc cac gag ggg cgg cgc ctg ggc ccg gtg				8928
Lys Met His Leu Tyr Gly Leu His Glu Gly Arg Arg Leu Gly Pro Val				
2961	2966	2971	2976	
tct gcc gtg ggc gtc aca gag gat gaa gcc gag acc acc caa gca gtg				8976
Ser Ala Val Gly Val Thr Glu Asp Glu Ala Glu Thr Thr Gln Ala Val				
2977	2982	2987	2992	
cct acc atg acc cct gag ccc ccc atc aag cct cgc ctg ggg gag ctg				9024
Pro Thr Met Thr Pro Glu Pro Pro Ile Lys Pro Arg Leu Gly Glu Leu				
2993	2998	3003	3008	
acc atg aca gat gcc acc cct gac tcc ctc agc ctg tcc tgg acg gtt				9072
Thr Met Thr Asp Ala Thr Pro Asp Ser Leu Ser Leu Ser Trp Thr Val				
3009	3014	3019	3024	
ccc gag ggc cag ttt gac cac ttc ctg gtc cag tac agg aat ggg gat				9120
Pro Glu Gly Gln Phe Asp His Phe Leu Val Gln Tyr Arg Asn Gly Asp				
3025	3030	3035	3040	
ggg cag ccc aag gcg gtg cgg gtg ccg ggg cac gag gac ggg gtc acc				9168
Gly Gln Pro Lys Ala Val Arg Val Pro Gly His Glu Asp Gly Val Thr				
3041	3046	3051	3056	
atc tca ggc ctg gag cca gac cat aaa tac aag atg aac ctg tac ggc				9216
Ile Ser Gly Leu Glu Pro Asp His Lys Tyr Lys Met Asn Leu Tyr Gly				
3057	3062	3067	3072	
ttc cac ggt ggc cag cgc gtg ggc ccc atc tct gtc att ggg gtg acg				9264
Phe His Gly Gly Gln Arg Val Gly Pro Ile Ser Val Ile Gly Val Thr				
3073	3078	3083	3088	
gct gca gag gaa gag acc ccc agc ccc acg gaa ctc agc act gag gcc				9312
Ala Ala Glu Glu Glu Thr Pro Ser Pro Thr Glu Leu Ser Thr Glu Ala				
3089	3094	3099	3104	
cgg gag ccc cct gag gag ccg ctc ctg ggg gag ctg aca gtg aca gga				9360
Arg Glu Pro Pro Glu Glu Pro Leu Leu Gly Glu Leu Thr Val Thr Gly				
3105	3110	3115	3120	

tcc tcc cct gac tgg ctg agc ctc tcc tgg acc atc ccc cag ggc cac	9408
Ser Ser Pro Asp Ser Leu Ser Leu Ser Trp Thr Ile Pro Gln Gly His	
3121 3126 3131 3136	
ttc gac tcc ttc acc gtg cag tac aag gac agg gac ggg cgg ccc cag	9456
Phe Asp Ser Phe Thr Val Gln Tyr Lys Asp Arg Asp Gly Arg Pro Gln	
3137 3142 3147 3152	
gtg atg cgt gtc agg ggc gag gag agc gag gtc acc gtg ggg ggc ctg	9504
Val Met Arg Val Arg Gly Glu Glu Ser Glu Val Thr Val Gly Gly Leu	
3153 3158 3163 3168	
gag ccc ggg cgc aaa tac aag atg cac ctg tac ggc ctc cac gag ggg	9552
Glu Pro Gly Arg Lys Tyr Lys Met His Leu Tyr Gly Leu His Glu Gly	
3169 3174 3179 3184	
cgg cgt gtg ggc ccg gtg tcc acc gtg ggt gtg aca gct cca gag gat	9600
Arg Arg Val Gly Pro Val Ser Thr Val Gly Val Thr Ala Pro Glu Asp	
3185 3190 3195 3200	
gaa gca gag acc acc caa gca gtg ccc acc aca acc cct gag ccc ccc	9648
Glu Ala Glu Thr Thr Gln Ala Val Pro Thr Thr Thr Pro Glu Pro Pro	
3201 3206 3211 3216	
aac aag cct cgc ctc ggg gag ctg acc gtg aca gat gcc acc cct gac	9696
Asn Lys Pro Arg Leu Gly Glu Leu Thr Val Thr Asp Ala Thr Pro Asp	
3217 3222 3227 3232	
tcc ctc agc ctg tcc tgg atg gtc ccc gag ggc cag ttt gac cac ttc	9744
Ser Leu Ser Leu Ser Trp Met Val Pro Glu Gly Gln Phe Asp His Phe	
3233 3238 3243 3248	
ctg gtc cag tac agg aat ggg gat ggg cag ccc aag gtg gtg cgg gtg	9792
Leu Val Gln Tyr Arg Asn Gly Asp Gly Gln Pro Lys Val Val Arg Val	
3249 3254 3259 3264	
ccg ggg cac gag gac ggg gtc acc atc tca ggc ctg gag cca gac cac	9840
Pro Gly His Glu Asp Gly Val Thr Ile Ser Gly Leu Glu Pro Asp His	
3265 3270 3275 3280	
aag tac aag atg aac ctg tac ggc ttc cac ggt ggc cag cgc gtg ggc	9888
Lys Tyr Lys Met Asn Leu Tyr Gly Phe His Gly Gly Gln Arg Val Gly	
3281 3286 3291 3296	
ccc atc tct gtc att ggg gtg aca gct gca gag gaa gaa act ccc gcc	9936
Pro Ile Ser Val Ile Gly Val Thr Ala Ala Glu Glu Glu Thr Pro Ala	
3297 3302 3307 3312	
ccc aca gaa ccc agc acg gag gcc ccg gag ccc cct gag gag ccg ctc	9984
Pro Thr Glu Pro Ser Thr Glu Ala Pro Glu Pro Pro Glu Glu Pro Leu	
3313 3318 3323 3328	
ctg ggg gag ctg aca gtg aca gga tcc tcc cct gac tgg ctg agc ctc	10032
Leu Gly Glu Leu Thr Val Thr Gly Ser Ser Pro Asp Ser Leu Ser Leu	
3329 3334 3339 3344	

tcc tgg acc atc ccc cag ggc cgc ttc gac tcc ttc act gtg cag tac	10080
Ser Trp Thr Ile Pro Gln Gly Arg Phe Asp Ser Phe Thr Val Gln Tyr	
3345 3350 3355 3360	
aag gac agg gac ggg cgg ccc cag gtg gtg cgt gtc agg ggc gag gag	10128
Lys Asp Arg Asp Gly Arg Pro Gln Val Val Arg Val Arg Gly Glu Glu	
3361 3366 3371 3376	
agc gag gtc acc gtg ggg ggc ctg gag ccc ggg tgc aaa tac aag atg	10176
Ser Glu Val Thr Val Gly Gly Leu Glu Pro Gly Cys Lys Tyr Lys Met	
3377 3382 3387 3392	
cac ctg tac ggc ctc cac gag ggg cag cgc gtg ggc cca gtg tcc gct	10224
His Leu Tyr Gly Leu His Glu Gly Gln Arg Val Gly Pro Val Ser Ala	
3393 3398 3403 3408	
gtg ggt gtg aca gct cca aag gat gaa gcc gag acc acc caa gca gtg	10272
Val Gly Val Thr Ala Pro Lys Asp Glu Ala Glu Thr Thr Gln Ala Val	
3409 3414 3419 3424	
cct acc atg acc cct gag ccc ccc atc aag cct cgc ctg ggg gag ctg	10320
Pro Thr Met Thr Pro Glu Pro Pro Ile Lys Pro Arg Leu Gly Glu Leu	
3425 3430 3435 3440	
acc gtg aca gat gcc acc ccc gac tcc ctc agc ctg tcc tgg atg gtt	10368
Thr Val Thr Asp Ala Thr Pro Asp Ser Leu Ser Leu Ser Trp Met Val	
3441 3446 3451 3456	
ccc gag ggc cag ttt gac cac ttc ctg gtc cag tac agg aat ggg gat	10416
Pro Glu Gly Gln Phe Asp His Phe Leu Val Gln Tyr Arg Asn Gly Asp	
3457 3462 3467 3472	
ggg cag ccc aag gcg gtg cgg gtg ccg ggg cac gag gac ggg gtc acc	10464
Gly Gln Pro Lys Ala Val Arg Val Pro Gly His Glu Asp Gly Val Thr	
3473 3478 3483 3488	
atc tca ggc ctg gag cca gac cat aaa tac aag atg aac ctg tac ggc	10512
Ile Ser Gly Leu Glu Pro Asp His Lys Tyr Lys Met Asn Leu Tyr Gly	
3489 3494 3499 3504	
ttc cac ggt ggc cag cgc gta ggc cct gtg tct gcc att ggg gtg acg	10560
Phe His Gly Gly Gln Arg Val Gly Pro Val Ser Ala Ile Gly Val Thr	
3505 3510 3515 3520	
gag gaa gag acc ccc agc ccc aca gaa ccc agc act gag gcc ccg gag	10608
Glu Glu Glu Thr Pro Ser Pro Thr Glu Pro Ser Thr Glu Ala Pro Glu	
3521 3526 3531 3536	
gcc cct gag gag ccg ctc ctg ggg gag ttg aca gtg aca gga tcc tcc	10656
Ala Pro Glu Glu Pro Leu Leu Gly Glu Leu Thr Val Thr Gly Ser Ser	
3537 3542 3547 3552	
cct gac tcg ctg agc ctc tcc tgg acc gtc ccc cag ggc cgc ttc gac	10704
Pro Asp Ser Leu Ser Leu Ser Trp Thr Val Pro Gln Gly Arg Phe Asp	
3553 3558 3563 3568	
tcc ttc acc gtg cag tac aag gac agg gac ggg cag ccc cag gtg gtg	10752

Ser Phe Thr Val Gln Tyr Lys Asp Arg Asp Gly Gln Pro Gln Val Val	
3569 3574 3579 3584	
cgt gtc agg ggc gag gag agc gag gtc acc gtg ggg ggc ctg gag ccc	10800
Arg Val Arg Gly Glu Glu Ser Glu Val Thr Val Gly Gly Leu Glu Pro	
3585 3590 3595 3600	
ggg cgc aaa tac aag atg cat ctg tac ggc ctc cac gag ggg cag cgc	10848
Gly Arg Lys Tyr Lys Met His Leu Tyr Gly Leu His Glu Gly Gln Arg	
3601 3606 3611 3616	
gtg ggc cca gtg tcc acc gtg ggc atc acg gcg ccc ctg ccc aca cca	10896
Val Gly Pro Val Ser Thr Val Gly Ile Thr Ala Pro Leu Pro Thr Pro	
3617 3622 3627 3632	
ctg ccg gtg gag ccc cgc ctg ggg gag ctg gcg gtg gcg gcc gtg acc	10944
Leu Pro Val Glu Pro Arg Leu Gly Glu Leu Ala Val Ala Ala Val Thr	
3633 3638 3643 3648	
tcg gac tca gtg ggc ctc tca tgg acg gtg gcc cag ggc ccc ttt gac	10992
Ser Asp Ser Val Gly Leu Ser Trp Thr Val Ala Gln Gly Pro Phe Asp	
3649 3654 3659 3664	
tcc ttc ctg gta cag tac agg gac gcg cag ggg cag ccc cag gca gtg	11040
Ser Phe Leu Val Gln Tyr Arg Asp Ala Gln Gly Gln Pro Gln Ala Val	
3665 3670 3675 3680	
cct gtg agc gga gac ctc cga gcg gtc gcc gtc tcg ggg ctg gac ccg	11088
Pro Val Ser Gly Asp Leu Arg Ala Val Ala Val Ser Gly Leu Asp Pro	
3681 3686 3691 3696	
gcc cgc aag tac aag ttc ctg ctc ttt gga ctc cag aat ggg aaa cgc	11136
Ala Arg Lys Tyr Lys Phe Leu Leu Phe Gly Leu Gln Asn Gly Lys Arg	
3697 3702 3707 3712	
cac ggc cca gtc cct gtg gag gcc agg acc gcc cca gac acc aaa ccg	11184
His Gly Pro Val Pro Val Glu Ala Arg Thr Ala Pro Asp Thr Lys Pro	
3713 3718 3723 3728	
tct ccc cgc ctg ggg gag ctg act gtg aca gat gcg acc cct gac tcc	11232
Ser Pro Arg Leu Gly Glu Leu Thr Val Thr Asp Ala Thr Pro Asp Ser	
3729 3734 3739 3744	
gtg ggc ctc tcg tgg acg gtc cct gag ggc gaa ttc gac tcc ttc gtg	11280
Val Gly Leu Ser Trp Thr Val Pro Glu Gly Glu Phe Asp Ser Phe Val	
3745 3750 3755 3760	
gtc cag tac aag gat aag gat ggt cgg ctc cag gtg gtg ccg gtg gca	11328
Val Gln Tyr Lys Asp Lys Asp Gly Arg Leu Gln Val Val Pro Val Ala	
3761 3766 3771 3776	
gcc aac cag cgg gag gtc aca gtc cag ggc ctg gag ccc agt agg aaa	11376
Ala Asn Gln Arg Glu Val Thr Val Gln Gly Leu Glu Pro Ser Arg Lys	
3777 3782 3787 3792	
tac agg ttc ctg ctc tat ggt ctg tca ggc agg aaa cga ctg ggc ccc	11424
Tyr Arg Phe Leu Leu Tyr Gly Leu Ser Gly Arg Lys Arg Leu Gly Pro	

3793	3798	3803	3808	
atc tct gct gac agc acc	aca gct ccc ctg gag	aag gag cta cct ccc	11472	
Ile Ser Ala Asp Ser Thr	Thr Ala Pro Leu Glu Lys	Glu Leu Pro Pro		
3809	3814	3819	3824	
cac ctg ggg gaa ctg acc	gtg gct gag gag acc	tcc agc tct ctg cgc	11520	
His Leu Gly Glu Leu Thr	Val Ala Glu Glu Thr	Ser Ser Ser Leu Arg		
3825	3830	3835	3840	
ctg tcc tgg acg gta gcc	cag ggc ccc ttt gac	tcc ttc gtg gtc cag	11568	
Leu Ser Trp Thr Val Ala	Gln Gly Pro Phe Asp	Ser Phe Val Val Gln		
3841	3846	3851	3856	
tac agg gac acg gac ggg	cag ccc agg gca gtg	cct gtg gcc gca gac	11616	
Tyr Arg Asp Thr Asp Gly	Gln Pro Arg Ala Val	Pro Val Ala Ala Asp		
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Gln Arg Thr Val Thr Val	Glu Asp Leu Glu Pro	Gly Lys Lys Tyr Lys		
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Phe Leu Leu Tyr Gly Leu	Leu Gly Gly Lys Arg	Leu Gly Pro Val Ser		
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gcc ctg gga atg aca gcc	cca gaa gag gac aca	cca gcc cca gag tta	11760	
Ala Leu Gly Met Thr Ala	Pro Glu Glu Asp Thr	Pro Ala Pro Glu Leu		
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gcc cca gag gcc cct gag	cct cct gaa gag ccc	cgc cta gga gtg ctg	11808	
Ala Pro Glu Ala Pro Glu	Pro Pro Glu Glu Pro	Arg Leu Gly Val Leu		
3921	3926	3931	3936	
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Thr Val Thr Asp Thr Thr	Pro Asp Ser Met Arg	Leu Ser Trp Ser Val		
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Gly Gln Pro Gln Ala Leu	Leu Val Asp Gly Asp	Gln Ser Lys Ile Leu		
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Ile Ser Gly Leu Glu Pro	Ser Thr Pro Tyr Arg	Phe Leu Leu Tyr Gly		
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Gly Leu Ala Pro Ala Gly	Gln Thr Ser Glu Glu	Ser Arg Pro Arg Leu		
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Trp Glu Ala Pro Pro Gly Ala Phe Asp Ser Phe Leu Leu Arg Phe Gly	
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Val Pro Ser Pro Ser Thr Leu Glu Pro His Pro Arg Pro Leu Leu Gln	
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Arg Glu Leu Met Val Pro Gly Thr Arg His Ser Ala Val Leu Arg Asp	
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Leu Arg Ser Gly Thr Leu Tyr Ser Leu Thr Leu Tyr Gly Leu Arg Gly	
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Pro His Lys Ala Asp Ser Ile Gln Gly Thr Ala Arg Thr Leu Ser Pro	
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Lys Val Ser Tyr Gln Leu Ala Asp Gly Gly Glu Pro Gln Ser Val Gln	
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Val Asp Gly Gln Ala Arg Thr Gln Lys Leu Gln Gly Leu Ile Pro Gly	
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Ala Arg Tyr Glu Val Thr Val Val Ser Val Arg Gly Phe Glu Glu Ser	
4193 4198 4203 4208	
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Glu Pro Leu Thr Gly Phe Leu Thr Thr Val Pro Asp Gly Pro Thr Gln	
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Leu Arg Ala Leu Asn Leu Thr Glu Gly Phe Ala Val Leu His Trp Lys	
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Pro Pro Gln Asn Pro Val Asp Thr Tyr Asp Val Gln Val Thr Ala Pro	
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Val Lys Cys Asn Gly Ala Leu Ile Asn Thr Ser Asp Thr Val Gln His				
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Phe Gly Ser Met Leu Arg Ala Leu Gly Ala Gln Ile Glu Lys Thr Thr				
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Glu Ala Glu Lys Glu Gln Lys Arg Leu Glu Arg Leu Gln Arg Lys Leu				
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His Glu Met Ala Glu Arg Leu Glu Asp Ser Val Leu Lys Gly Met Gln				
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gct gcc tcc agc aag atg gtt tca gca gaa atc agt gag aat cgg aaa				636
Ala Ala Ser Ser Lys Met Val Ser Ala Glu Ile Ser Glu Asn Arg Lys				
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Lys Arg Arg Cys Phe Trp Leu Gly Met Glu Gly Leu Glu Thr Ala Glu				
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Gly Ser Asn Ser Glu Ser Ser Asp Asp Asp Ser Glu Glu Ala Pro Ser				
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Thr Ser Gly Met Gly Phe His Ala Pro Lys Ile Gly Ser Asn Gly Val				
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Ile Asp Leu Leu Ala Phe Thr Ser Val Ala Glu Leu Glu Leu Leu Gly	
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Met Leu	1
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Asn Gly Ser Gly Glu Gln Ser Lys Thr Ser Asn Asn Gly Gly Gly Leu	
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Gly Lys Lys Met Arg Ala Ile Ser Trp Thr Met Lys Lys Lys Val Gly	
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Lys Lys Tyr Ile Lys Ala Leu Ser Glu Glu Lys Asp Glu Glu Asp Gly	
83 88 93 98	
gag aat gcc cac cca tat aga aac agt gac cct gtg att ggg acc cac	453
Glu Asn Ala His Pro Tyr Arg Asn Ser Asp Pro Val Ile Gly Thr His	
99 104 109 114	
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Thr Glu Lys Val Ser Leu Lys Ala Ser Asp Ser Met Asp Ser Leu Tyr	
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Ser Gly Gln Ser Ser Ser Ser Gly Ile Thr Ser Cys Ser Asp Gly Thr	
131 136 141 146	
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Ser Asn Arg Asp Ser Phe Arg Leu Asp Asp Asp Gly Pro Tyr Ser Gly	
147 152 157 162	
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Pro Phe Cys Gly Arg Ala Arg Val His Thr Asp Phe Thr Pro Ser Pro	
163 168 173 178	
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Tyr Asp Thr Asp Ser Leu Lys Ile Lys Lys Gly Asp Ile Ile Asp Ile	
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Asp Ile Lys Glu Ser His Leu Ile Glu Leu Asn Ile Glu Asn Pro Asp	
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Ile Ile Gln Glu Gln Glu Asn Glu Pro Glu Pro Leu Ser Leu Ser Ser	
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Gly Cys Tyr Ile Ser Ser Gly Asn Ser Asp Asn Gly Lys Glu Asp Leu	
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gattgtctca ttgttagtgc tgaatcttct tgcctacttg tatctgggaa ttttaactttg 240  
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Lys Tyr Glu Pro Pro Asp Pro Arg Arg Met Tyr Thr Ile Met Ser Ser  
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Glu Glu Ala Ala Asn Gly Lys Lys Ser His Trp Ala Glu Leu Glu Ile  
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Ser Gly Lys Val Arg Ser Leu Ser Ala Ser Leu Trp Ser Leu Thr His  
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53 58 63 68  
gac att gcc aag ctt cac aat ctg gtg tat ttg gac ctg tca tct aat 535  
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Lys Ala Ser Arg Asn Leu Lys Ser Ser Val Leu Gly Glu Phe Gly Thr	
389 394 399 404	
att cca ctt gtg tta tgt gca gat ctt aat tct ttg cca gac tct ggt	1543
Ile Pro Leu Val Leu Cys Ala Asp Leu Asn Ser Leu Pro Asp Ser Gly	
405 410 415 420	
gtt gta gaa tat ttg agc aca ggt gga gta gaa aca aat cac aaa gac	1591
Val Val Glu Tyr Leu Ser Thr Gly Gly Val Glu Thr Asn His Lys Asp	
421 426 431 436	
ttt aag gag ttg agg tat aat gaa agt ctc aca aac ttc agc tgt cat	1639
Phe Lys Glu Leu Arg Tyr Asn Glu Ser Leu Thr Asn Phe Ser Cys His	
437 442 447 452	
ggg aag aat gga acc acc aat gga agg atc act cat ggt ttc aag tta	1687
Gly Lys Asn Gly Thr Thr Asn Gly Arg Ile Thr His Gly Phe Lys Leu	
453 458 463 468	
cag agt gcc tat gag agt ggc ctg atg cct tac acg aat tac aca ttt	1735
Gln Ser Ala Tyr Glu Ser Gly Leu Met Pro Tyr Thr Asn Tyr Thr Phe	
469 474 479 484	
gat ttc aag ggt ata ata gac tac att ttc tat tct aaa cct cag ctg	1783
Asp Phe Lys Gly Ile Ile Asp Tyr Ile Phe Tyr Ser Lys Pro Gln Leu	
485 490 495 500	
aac acc tta ggc atc ctg ggc cct ctg gac cac cac tgg ctg gtt gag	1831
Asn Thr Leu Gly Ile Leu Gly Pro Leu Asp His His Trp Leu Val Glu	
501 506 511 516	
aat aac atc agt ggc tgc ccg cac ccc ctc atc ccc tct gac cac ttc	1879
Asn Asn Ile Ser Gly Cys Pro His Pro Leu Ile Pro Ser Asp His Phe	
517 522 527 532	
tca ctt ttt gca caa ctg gag ctc tta ctg cct ttc ctg ccc caa gtc	1927

Ser Leu Phe Ala Gln Leu Glu Leu Leu Leu Pro Phe Leu Pro Gln Val  
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aac ggc atc cac ctt cct ggc agg agg tag t caagcacctt cagaggacag 1978  
 Asn Gly Ile His Leu Pro Gly Arg Arg \*  
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ccttgattca cttgtaaaact tgtgaaaatc tgaacatagg ggagtggaggt atggccactg 2038

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 Ala Arg Leu Asp Tyr Glu Leu Ile Gln Arg Phe Thr Leu Thr Ile Ile  
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 Ala Arg Asp Gly Gly Gly Glu Glu Thr Thr Gly Arg Val Arg Ile Asn  
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 Val Leu Asp Val Asn Asp Asn Val Pro Thr Phe Gln Lys Asp Ala Tyr  
 36 41 46 51

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 Val Gly Ala Leu Arg Glu Asn Glu Pro Ser Val Thr Gln Leu Val Arg  
 52 57 62 67

ctc cgg gca aca gat gaa gac tcc cct ccc aac aac cag atc acc tac 294  
 Leu Arg Ala Thr Asp Glu Asp Ser Pro Pro Asn Asn Gln Ile Thr Tyr  
 68 73 78 83

agc att gtc agt gca tct gcc ttt ggc agc tac ttc gac atc agc ctg 342  
 Ser Ile Val Ser Ala Ser Ala Phe Gly Ser Tyr Phe Asp Ile Ser Leu  
 84 89 94 99

tac gag ggc tat gga gtg atc agc gtc agt cgc ccc ctg gat tat gaa 390

Tyr Glu Gly Tyr Gly Val Ile Ser Val Ser Arg Pro Leu Asp Tyr Glu	
100 105 110 115	
cag ata tcc aat ggg ctg att tat ctg acg gtc atg gcc atg gat gct	438
Gln Ile Ser Asn Gly Leu Ile Tyr Leu Thr Val Met Ala Met Asp Ala	
116 121 126 131	
ggc aac ccc cct ctc aac agc acc gtc cct gtc acc atc gag gtg ttt	486
Gly Asn Pro Pro Leu Asn Ser Thr Val Pro Val Thr Ile Glu Val Phe	
132 137 142 147	
gat gag aat gac gac cct ccc acc ttc agc aag ccc gcc tac ttc gtc	534
Asp Glu Asn Asp Asp Pro Pro Thr Phe Ser Lys Pro Ala Tyr Phe Val	
148 153 158 163	
tcc gtg gtg gag aac atc atg gca gga gcc acg gtg ctg ttc ctg aat	582
Ser Val Val Glu Asn Ile Met Ala Gly Ala Thr Val Leu Phe Leu Asn	
164 169 174 179	
gcc aca gac ctg gac cgc tcc cgg gag tac ggc cag gag tcc atc atc	630
Ala Thr Asp Leu Asp Arg Ser Arg Glu Tyr Gly Gln Glu Ser Ile Ile	
180 185 190 195	
tac tcc ttg gaa ggc tcc acc cag ttt cgg atc aat gcc cgc tca ggg	678
Tyr Ser Leu Glu Gly Ser Thr Gln Phe Arg Ile Asn Ala Arg Ser Gly	
196 201 206 211	
gaa atc acc acc acg tct ctg ctt gac cga gag acc aag tct gaa tac	726
Glu Ile Thr Thr Thr Ser Leu Leu Asp Arg Glu Thr Lys Ser Glu Tyr	
212 217 222 227	
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Ile Leu Ile Val Arg Ala Val Asp Gly Gly Val Gly His Asn Gln Lys	
228 233 238 243	
act ggc atc gcc acc gta aac atc acc ctc ctg gac atc aac gac aac	822
Thr Gly Ile Ala Thr Val Asn Ile Thr Leu Leu Asp Ile Asn Asp Asn	
244 249 254 259	
cac ccc acg tgg aag gac gca ccc tac tac atc aac ctg gtg gag atg	870
His Pro Thr Trp Lys Asp Ala Pro Tyr Tyr Ile Asn Leu Val Glu Met	
260 265 270 275	
acc cct cca gac tct gac gtg acc acg gtg gtg gct gtt gac cca gac	918
Thr Pro Pro Asp Ser Asp Val Thr Thr Val Val Ala Val Asp Pro Asp	
276 281 286 291	
ctg ggg gag aat ggc acc ctg gtg tac agc atc cag cca ccc aac aag	966
Leu Gly Glu Asn Gly Thr Leu Val Tyr Ser Ile Gln Pro Pro Asn Lys	
292 297 302 307	
ttc tac agc ctc aac agc acc acg ggc aag atc cgc acc acc cac gcc	1014
Phe Tyr Ser Leu Asn Ser Thr Thr Gly Lys Ile Arg Thr Thr His Ala	
308 313 318 323	
atg ctg gac cgg gag aac ccc gac ccc cat gag gcc gag ctg atg cgc	1062
Met Leu Asp Arg Glu Asn Pro Asp Pro His Glu Ala Glu Leu Met Arg	

324	329	334	339	
aaa atc gtc gtc tct gtt act gac tgt ggc agg ccc cct ctg aaa gcc				1110
Lys Ile Val Val Ser Val Thr Asp Cys Gly Arg Pro Pro Leu Lys Ala				
340	345	350	355	
acc agc agt gcc aca gtg ttt gtg aac ctc ttg gat ctc aat gac aat				1158
Thr Ser Ser Ala Thr Val Phe Val Asn Leu Leu Asp Leu Asn Asp Asn				
356	361	366	371	
gac ccc acc ttt cag aac ctg cct ttt gtg gcc gag gtg ctt gaa ggc				1206
Asp Pro Thr Phe Gln Asn Leu Pro Phe Val Ala Glu Val Leu Glu Gly				
372	377	382	387	
atc ccg gcg ggg gtc tcc atc tac caa gtg gtg gcc atc gac ctc gat				1254
Ile Pro Ala Gly Val Ser Ile Tyr Gln Val Val Ala Ile Asp Leu Asp				
388	393	398	403	
gag gcc ctg aac gcc ctg gtg tcc tac cgc atg ccg gtg gcc atg ccc				1302
Glu Gly Leu Asn Gly Leu Val Ser Tyr Arg Met Pro Val Gly Met Pro				
404	409	414	419	
cgc atg gac ttc ctc atc aac agc agc agc ggc gtg gtg gtc acc acc				1350
Arg Met Asp Phe Leu Ile Asn Ser Ser Ser Gly Val Val Val Thr Thr				
420	425	430	435	
acc gag ctg gac cgc gag cgc atc gcg gag tac cag ctg cgg gtg gtg				1398
Thr Glu Leu Asp Arg Glu Arg Ile Ala Glu Tyr Gln Leu Arg Val Val				
436	441	446	451	
gcc agt gat gca gcc acg ccc acc aag agc tcc acc agc acg ctc acc				1446
Ala Ser Asp Ala Gly Thr Pro Thr Lys Ser Ser Thr Ser Thr Leu Thr				
452	457	462	467	
atc cat gtg ctg gat gtg aac gac gag acg ccc acc ttc ttc ccg gcc				1494
Ile His Val Leu Asp Val Asn Asp Glu Thr Pro Thr Phe Phe Pro Ala				
468	473	478	483	
gtg tac aat gtg tct gtg tcc gag gac gtg cca cgc gag ttc cgg gtg				1542
Val Tyr Asn Val Ser Val Ser Glu Asp Val Pro Arg Glu Phe Arg Val				
484	489	494	499	
gtc tgg ctg aac tgc acg gac aac gac gtg gcc ctc aat gca gag ctc				1590
Val Trp Leu Asn Cys Thr Asp Asn Asp Val Gly Leu Asn Ala Glu Leu				
500	505	510	515	
agc tac ttc atc aca ggt gct gcc ccg gcc tcc acc cac ctg tgc agg				1638
Ser Tyr Phe Ile Thr Gly Ala Ala Pro Ala Ser Thr His Leu Cys Arg				
516	521	526	531	
cct cct ggg gcc ctg cct cca ccc ctc cca gat gga cag cca gac tag				1686
Pro Pro Gly Ala Leu Pro Pro Pro Leu Pro Asp Gly Gln Pro Asp *				
532	537	542	547	
gtgggggcag gtgaggggtgg aaaagaggtc agggctctac tggtgggctt tagcctctgg				1746
tggtgcctcc cgaggatttg ctctggctc ttcccaaggg ctttgcagct ggatcactct				1806

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 ggccgagtgg gcgaagccca gcacatttcg ggggcggggg gcaggtgagg gtccccagat 180  
 gtcccttcag tgcttccgaa gacaccggag gggagtaccc cgcgtagagc gcagctggac 240  
 cctcgggggtg cgggcccctc tccttgtcct gcttttcagc atctttggca attgcgcaaa 300  
 gttgcttggg ttgcaatggt ggggtgcagg gggcgctcgg ctgctgcacc tgtagtgct 360  
 gggcccaggt tgagaggcga cctccagccc ccacaata atg tcc cgg gct ctc 413  
 Met Ser Arg Ala Leu  
 1  
 tgg ttt ggg tcc tcg cag cgc ccg att gac cgc cag cga tac gac gag 461  
 Trp Phe Gly Ser Ser Gln Arg Pro Ile Asp Arg Gln Arg Tyr Asp Glu  
 6 11 16 21  
 aac gag gac ttg tcg gac gtg gag gag atc gtc agc gtc cgc ggc ttc 509  
 Asn Glu Asp Leu Ser Asp Val Glu Glu Ile Val Ser Val Arg Gly Phe  
 22 27 32 37  
 agc ctg gag gag aag ctt cgc agc cag ctg tac cag ggg gac ttc gtg 557  
 Ser Leu Glu Glu Lys Leu Arg Ser Gln Leu Tyr Gln Gly Asp Phe Val  
 38 43 48 53  
 cac gcc atg gag ggc aaa gat ttc aac tat gag tac gta cag aga gaa 605  
 His Ala Met Glu Gly Lys Asp Phe Asn Tyr Glu Tyr Val Gln Arg Glu  
 54 59 64 69  
 gct ctc agg gtt ccc ctg ata ttt cga gaa aag gat gga ctg gga att 653

Ala Leu Arg Val Pro Leu Ile Phe Arg Glu Lys Asp Gly Leu Gly Ile	
70 75 80 85	
aag atg cct gac cct gat ttc aca gtc cga gac gtc aaa ctc cta gtg	701
Lys Met Pro Asp Pro Asp Phe Thr Val Arg Asp Val Lys Leu Leu Val	
86 91 96 101	
ggg agc cgg cgg ctt gtg gac gtg atg gat gtg aac acc cag aag ggc	749
Gly Ser Arg Arg Leu Val Asp Val Met Asp Val Asn Thr Gln Lys Gly	
102 107 112 117	
acg gag atg agc atg tcc cag ttt gtg cgt tac tac gag acg ccc gag	797
Thr Glu Met Ser Met Ser Gln Phe Val Arg Tyr Tyr Glu Thr Pro Glu	
118 123 128 133	
gcc cag cgg gac aag ctg tac aac gtc atc agc cta gag ttc agc cac	845
Ala Gln Arg Asp Lys Leu Tyr Asn Val Ile Ser Leu Glu Phe Ser His	
134 139 144 149	
acc aag ctg gag cac ttg gtc aag cgt ccg act gtg gta gac ctg gtg	893
Thr Lys Leu Glu His Leu Val Lys Arg Pro Thr Val Val Asp Leu Val	
150 155 160 165	
gac tgg gtg gac aac atg tgg ccc cag cat ctg aag gag aag cag aca	941
Asp Trp Val Asp Asn Met Trp Pro Gln His Leu Lys Glu Lys Gln Thr	
166 171 176 181	
gaa gcc acg aac gcc att gca gag atg aag tac ccg aaa gtg aaa aag	989
Glu Ala Thr Asn Ala Ile Ala Glu Met Lys Tyr Pro Lys Val Lys Lys	
182 187 192 197	
tac tgt ctg atg agc gtg aaa ggt tgt ttc acc gac ttc cac atc gac	1037
Tyr Cys Leu Met Ser Val Lys Gly Cys Phe Thr Asp Phe His Ile Asp	
198 203 208 213	
ttt gga ggc act tcc gtt tgg tac cat gtt ttc cgg ggt ggg aag att	1085
Phe Gly Gly Thr Ser Val Trp Tyr His Val Phe Arg Gly Gly Lys Ile	
214 219 224 229	
ttt tgg ctg att cct cca acg ctg cac aat ttg gcg ctg tac gag gag	1133
Phe Trp Leu Ile Pro Pro Thr Leu His Asn Leu Ala Leu Tyr Glu Glu	
230 235 240 245	
tgg gtg ctg tca ggc aaa cag agt gac atc ttt ctg gga gac cgt gtg	1181
Trp Val Leu Ser Gly Lys Gln Ser Asp Ile Phe Leu Gly Asp Arg Val	
246 251 256 261	
gaa cga tgc caa aga att gag ctg aag cag ggc tac aca ttt ttc atc	1229
Glu Arg Cys Gln Arg Ile Glu Leu Lys Gln Gly Tyr Thr Phe Phe Ile	
262 267 272 277	
cct tcc ggt tgg atc cat gcc gtc tac acc cct gta gac tct ttg gtg	1277
Pro Ser Gly Trp Ile His Ala Val Tyr Thr Pro Val Asp Ser Leu Val	
278 283 288 293	
ttc ggc gga aac atc ctg cac agc ttt aac gtg ccc atg cag ctg cgg	1325
Phe Gly Gly Asn Ile Leu His Ser Phe Asn Val Pro Met Gln Leu Arg	

294	299	304	309	
atc tac gag atc gag gac agg acg cgg gtg cag ccc aaa ttc cgt tac				1373
Ile Tyr Glu Ile Glu Asp Arg Thr Arg Val Gln Pro Lys Phe Arg Tyr				
310	315	320	325	
ccc ttc tac tat gag atg tgc tgg tat gtc ctg gag aga tac gtg tac				1421
Pro Phe Tyr Tyr Glu Met Cys Trp Tyr Val Leu Glu Arg Tyr Val Tyr				
326	331	336	341	
tgt gtg acc cag cgc tcc cac ctc act cag gaa tac cag agg gag tcg				1469
Cys Val Thr Gln Arg Ser His Leu Thr Gln Glu Tyr Gln Arg Glu Ser				
342	347	352	357	
atg ctt att gat gcc ccg agg aag ccc agc ata gac ggc ttc tct tcg				1517
Met Leu Ile Asp Ala Pro Arg Lys Pro Ser Ile Asp Gly Phe Ser Ser				
358	363	368	373	
gat tcc tgg ctg gag atg gag gag gag gcc tgt gat cag cag cct cag				1565
Asp Ser Trp Leu Glu Met Glu Glu Glu Ala Cys Asp Gln Gln Pro Gln				
374	379	384	389	
gag gag gag gag aag gac gag gag ggc gag ggc agg gac agg gca ccc				1613
Glu Glu Glu Glu Lys Asp Glu Glu Gly Glu Gly Arg Asp Arg Ala Pro				
390	395	400	405	
aaa ccg ccc acc gat ggc tcc act tca ccc acc agc acg ccc tct gag				1661
Lys Pro Pro Thr Asp Gly Ser Thr Ser Pro Thr Ser Thr Pro Ser Glu				
406	411	416	421	
gac cag gag gcc ctc ggg aag aag ccc aaa gca cct gcc ctg cga ttc				1709
Asp Gln Glu Ala Leu Gly Lys Lys Pro Lys Ala Pro Ala Leu Arg Phe				
422	427	432	437	
ctc aaa agg act ttg tct aat gag tcg gag gaa agt gtg aag tcc acc				1757
Leu Lys Arg Thr Leu Ser Asn Glu Ser Glu Glu Ser Val Lys Ser Thr				
438	443	448	453	
aca ttg gcc gta gac tac ccc aag acc ccc acc ggc tct ccc gcc acg				1805
Thr Leu Ala Val Asp Tyr Pro Lys Thr Pro Thr Gly Ser Pro Ala Thr				
454	459	464	469	
gag gtc tct gcc aaa tgg acc cat ctc act gag ttt gaa ctg aag ggc				1853
Glu Val Ser Ala Lys Trp Thr His Leu Thr Glu Phe Glu Leu Lys Gly				
470	475	480	485	
ctg aaa gct ctg gtg gag aaa ctg gaa tcc ctc ccg gag aac aag aag				1901
Leu Lys Ala Leu Val Glu Lys Leu Glu Ser Leu Pro Glu Asn Lys Lys				
486	491	496	501	
tgt gtc ccc gag ggc atc gag gac ccc cag gca ctc ctg gag ggt gtg				1949
Cys Val Pro Glu Gly Ile Glu Asp Pro Gln Ala Leu Leu Glu Gly Val				
502	507	512	517	
aag aac gtc ctg aag gag cac gca gat gat gac cct agt ctg gcc atc				1997
Lys Asn Val Leu Lys Glu His Ala Asp Asp Asp Pro Ser Leu Ala Ile				
518	523	528	533	



act ggg gtc cct gtg gtg act tgg cca aag aag act cca aag aac cgg	2045
Thr Gly Val Pro Val Val Thr Trp Pro Lys Lys Thr Pro Lys Asn Arg	
534 539 544 549	
gct gtg ggt cgg ccc aag ggg aag ctg ggc ccg gcc tcc gcg gtg aag	2093
Ala Val Gly Arg Pro Lys Gly Lys Leu Gly Pro Ala Ser Ala Val Lys	
550 555 560 565	
ttg gcc gcc aac cgg aca acg gca gga gct cgg cgg cgc cgg acg cga	2141
Leu Ala Ala Asn Arg Thr Thr Ala Gly Ala Arg Arg Arg Arg Thr Arg	
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tgc cgc aag tgc gag gcc tgc ctg cgg acc gag tgc gga gag tgc cac	2189
Cys Arg Lys Cys Glu Ala Cys Leu Arg Thr Glu Cys Gly Glu Cys His	
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Phe Cys Lys Asp Met Lys Lys Phe Gly Gly Pro Gly Arg Met Lys Gln	
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agc tgc atc atg cgg cag tgc atc gcg cca gtg ctg ccc cac acc gcc	2285
Ser Cys Ile Met Arg Gln Cys Ile Ala Pro Val Leu Pro His Thr Ala	
614 619 624 629	
gtg tgc ctt gtg tgt ggc gag gcg ggg aag gaa gac acg gtg gaa gag	2333
Val Cys Leu Val Cys Gly Glu Ala Gly Lys Glu Asp Thr Val Glu Glu	
630 635 640 645	
gag gaa ggc aag ttt aac ctc atg ctc atg gag tgc tcc atc tgc aat	2381
Glu Glu Gly Lys Phe Asn Leu Met Leu Met Glu Cys Ser Ile Cys Asn	
646 651 656 661	
gaa atc atc cac cct gga tgc ctt aag gtg agt ggc cca gtg ggg aca	2429
Glu Ile Ile His Pro Gly Cys Leu Lys Val Ser Gly Pro Val Gly Thr	
662 667 672 677	
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Gly Gly Ala Asp Ala Leu Gly Gln Val Gly Leu Leu Glu Met Leu Val	
678 683 688 693	
aga tgg tgg gat gca ggt cgt gca gtg aat tcc tgg agg acc cct gag	2525
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Met Asn Asn Ser

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acc acc acc act agt agc agc aac tcc aag gat tgt gga ggt ccg gcc 164  
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5 10 15 20

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Ser Ser Gly Ala Gly Ala Thr Ala Ala Leu Ala Asp Gly Leu Lys Phe  
21 26 31 36

gct tct gtt cag gcc tct gct ccc cag ggg aat tca cac aaa gag acc 260  
Ala Ser Val Gln Ala Ser Ala Pro Gln Gly Asn Ser His Lys Glu Thr  
37 42 47 52

agc aaa tca aaa gtg aaa agg agt aaa act tct aag gat gct aat aaa 308  
Ser Lys Ser Lys Val Lys Arg Ser Lys Thr Ser Lys Asp Ala Asn Lys  
53 58 63 68

tct ctg cct tct gct gcc ttg tat ggg att ccc gag atc agc agc act 356  
Ser Leu Pro Ser Ala Ala Leu Tyr Gly Ile Pro Glu Ile Ser Ser Thr  
69 74 79 84

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Gly Lys Arg Gln Glu Val Gln Gly Arg Pro Gly Glu Ala Thr Gly Met  
85 90 95 100

aat tca gcg ctg ggt caa agt gtg agc agc ggc ggc agc ggc aac cca 452  
Asn Ser Ala Leu Gly Gln Ser Val Ser Ser Gly Gly Ser Gly Asn Pro  
101 106 111 116

aac agc aat agt acc agc acc agc acc tct gcc gcc acc gcg ggg gca 500  
Asn Ser Asn Ser Thr Ser Thr Ser Thr Ser Ala Ala Thr Ala Gly Ala  
117 122 127 132

ggc tcc tgt ggg aaa agc aaa gag gag aag cca ggt aaa agc cag agc 548  
Gly Ser Cys Gly Lys Ser Lys Glu Glu Lys Pro Gly Lys Ser Gln Ser  
133 138 143 148

agc cga ggc gcc aag cgg gat aag gat gcg ggg aaa tcc agg aag gac 596  
Ser Arg Gly Ala Lys Arg Asp Lys Asp Ala Gly Lys Ser Arg Lys Asp  
149 154 159 164

aag cac gac ctg ctt cag ggc cac cag aat ggc agt ggc agc cag gcc 644  
Lys His Asp Leu Leu Gln Gly His Gln Asn Gly Ser Gly Ser Gln Ala  
165 170 175 180

cct tcc ggg ggg cac ctc tat ggc ttt ggg gcc aag agc aat gga ggt 692

Pro Ser Gly Gly His Leu Tyr Gly Phe Gly Ala Lys Ser Asn Gly Gly	
181 186 191 196	
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Gly Ala Ser Pro Phe His Cys Gly Gly Thr Gly Ser Gly Ser Val Ala	
197 202 207 212	
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Ala Ala Gly Glu Val Ser Lys Ser Ala Pro Asp Ser Gly Leu Met Gly	
213 218 223 228	
aac tct atg ttg gta aag aag gaa gag gag gag gag gag agc cac agg	836
Asn Ser Met Leu Val Lys Lys Glu Glu Glu Glu Glu Glu Ser His Arg	
229 234 239 244	
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Arg Ile Lys Lys Leu Lys Thr Glu Lys Val Asp Pro Leu Phe Thr Val	
245 250 255 260	
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Pro Ala Pro Pro Pro Pro Ile Ser Ser Ser Leu Thr Pro Gln Ile Leu	
261 266 271 276	
ccc tcc tac ttt tcc cca tct tca tcc aat att gca gca ccg gtt gaa	980
Pro Ser Tyr Phe Ser Pro Ser Ser Ser Asn Ile Ala Ala Pro Val Glu	
277 282 287 292	
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Gln Leu Leu Val Arg Thr Arg Ser Val Gly Val Asn Thr Cys Glu Val	
293 298 303 308	
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Gly Val Val Thr Glu Pro Glu Cys Leu Gly Pro Cys Glu Pro Gly Thr	
309 314 319 324	
agt gtg aat ttg gaa ggg atc gtg tgg cat gaa aca gaa gaa ggt gtc	1124
Ser Val Asn Leu Glu Gly Ile Val Trp His Glu Thr Glu Glu Gly Val	
325 330 335 340	
cta gtg gtc aat gtc acg tgg agg aac aaa acg tac gtg gga acc cta	1172
Leu Val Val Asn Val Thr Trp Arg Asn Lys Thr Tyr Val Gly Thr Leu	
341 346 351 356	
ctg gac tgc acc aag cac gac tgg gcc cct ccc agg ttt tgt gag tca	1220
Leu Asp Cys Thr Lys His Asp Trp Ala Pro Pro Arg Phe Cys Glu Ser	
357 362 367 372	
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Pro Thr Ser Asp Leu Glu Met Arg Gly Gly Arg Gly Arg Gly Lys Arg	
373 378 383 388	
gcg agg tct gct gct gct gcc ccg ggc tcc gag gcc agc ttc aca gag	1316
Ala Arg Ser Ala Ala Ala Ala Pro Gly Ser Glu Ala Ser Phe Thr Glu	
389 394 399 404	
tcc aga ggg ctg cag aat aag aac aga ggg ggg gcc aat ggg aaa ggg	1364
Ser Arg Gly Leu Gln Asn Lys Asn Arg Gly Gly Ala Asn Gly Lys Gly	

405	410	415	420	
agg cgg ggc agc ctc aat gcc agc gga cga agg aca ccc cca aat tgt				1412
Arg Arg Gly Ser Leu Asn Ala Ser Gly Arg Arg Thr Pro Pro Asn Cys				
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gct gct gag gat atc aaa gcc agc cct tcc tcc acc aaa aaa aaa aaa				1460
Ala Ala Glu Asp Ile Lys Ala Ser Pro Ser Ser Thr Lys Lys Lys Lys				
437	442	447	452	
aac aag cct cca atg gag ctg gac ctg aac tcc agc tct gag gac aat				1508
Asn Lys Pro Pro Met Glu Leu Asp Leu Asn Ser Ser Ser Glu Asp Asn				
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aag cct gga aag cgt gtc cgc aca aat tcc aga agc act ccc act acc				1556
Lys Pro Gly Lys Arg Val Arg Thr Asn Ser Arg Ser Thr Pro Thr Thr				
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Pro Gln Gly Lys Pro Glu Thr Thr Phe Leu Asp Gln Gly Cys Ser Ser				
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Pro Val Leu Ile Asp Cys Pro His Pro Asn Cys Asn Lys Lys Tyr Lys				
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His Ile Asn Gly Leu Arg Tyr His Gln Ala His Ala His Leu Asp Pro				
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gaa aac aag ctg gag ttc gag cct gac agt gag gac aag atc tcg gac				1748
Glu Asn Lys Leu Glu Phe Glu Pro Asp Ser Glu Asp Lys Ile Ser Asp				
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Cys Glu Glu Gly Leu Ser Asn Val Ala Leu Glu Cys Ser Glu Pro Ser				
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Thr Ser Val Ser Ala Tyr Asp Gln Leu Lys Ala Pro Ala Ser Pro Gly				
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aat ggc cca ggt tcc att att ggt gct aaa gct ggg aag aat tct ggc				1940
Asn Gly Pro Gly Ser Ile Ile Gly Ala Lys Ala Gly Lys Asn Ser Gly				
597	602	607	612	
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Thr Val Val Gln Ala Thr Pro Lys Ser Pro Pro Leu Lys Pro Ile Gln	
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cca aag ccc aca att atg gga gag ccc atc acc gtg aac cca gct ctg	2372
Pro Lys Pro Thr Ile Met Gly Glu Pro Ile Thr Val Asn Pro Ala Leu	
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Val Ser Leu Lys Asp Lys Lys Lys Lys Glu Lys Arg Lys Leu Lys Asp	
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Val Tyr Thr Phe Thr Asp Asn Ala Pro Ser Pro Ser Ile Gly Ser Ala	
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Ser Arg Leu Glu Cys Ser Thr Leu Val Asn Gly Gln Ala Pro Met Ala	
853 858 863 868	

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Gly Ala Pro Pro Leu Gln Ala Glu Thr Pro Gly Ser Ala Val Asp Tyr	
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Pro Leu His Asp Leu Val Leu His Thr Asn Tyr Thr Ala Thr Val Arg	
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Gly Leu Arg Gly Pro Asn Leu Thr Ser Pro Ala Ser Ile Thr Phe Thr	
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cgc acc gcc ctg ctc act tgg act gag ccc cca gtc cgg ccc gca ggc	13008
Arg Thr Ala Leu Leu Thr Trp Thr Glu Pro Pro Val Arg Pro Ala Gly	
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tac ctg ctc agc ttc cac acc cct ggt gga cag aac cag gag atc ctg	13056
Tyr Leu Leu Ser Phe His Thr Pro Gly Gly Gln Asn Gln Glu Ile Leu	
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Leu Pro Gly Gly Ile Thr Ser His Gln Leu Leu Gly Leu Phe Pro Ser	
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Thr Ser Tyr Asn Ala Arg Leu Gln Ala Met Trp Gly Gln Ser Leu Leu	
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Pro Pro Val Ser Thr Ser Phe Thr Thr Gly Gly Leu Arg Ile Pro Phe	
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Pro Arg Asp Cys Gly Glu Glu Met Gln Asn Gly Ala Gly Ala Ser Arg	
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Phe Cys Asp Met Glu Thr Asp Gly Gly Gly Trp Leu Val Phe Gln Arg	
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Arg Met Asp Gly Gln Thr Asp Phe Trp Arg Asp Trp Glu Asp Tyr Ala	
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His Gly Phe Gly Asn Ile Ser Gly Glu Phe Trp Leu Gly Asn Glu Ala	
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1322

1327

1332

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gccaggcagc ccttcgggttc ggggtgggccc atggacccca gtccaacgcc gagggaatag      420
gaccatccaa aagcgggaacc ttcgcctcag aaaaagggtg cgggaccctt cctcaccgtg      480
cggtcacgcg tggaccctgc cagcagccag gcc atg gag ctc tct gat gtc acc      534
                               Met Glu Leu Ser Asp Val Thr
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Leu Ile Glu Gly Val Gly Asn Glu Val Met Val Val Ala Gly Val Val
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gtg ctg att cta gcc ttg gtc cta gct tgg ctc tct acc tac gta gca      630
Val Leu Ile Leu Ala Leu Val Leu Ala Trp Leu Ser Thr Tyr Val Ala
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gac agc ggt agc aac cag ctc ctg ggc gct att gtg tca gca ggc gac      678
Asp Ser Gly Ser Asn Gln Leu Leu Gly Ala Ile Val Ser Ala Gly Asp
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aca tcc gtc ctc cac ctg ggg cat gtg gac cac ctg gtg gca ggc caa      726
Thr Ser Val Leu His Leu Gly His Val Asp His Leu Val Ala Gly Gln
  56                               61                               66                               71

ggc aac ccc gag cca act gaa ctc ccc cat cca tca gag ggt aat gat      774
Gly Asn Pro Glu Pro Thr Glu Leu Pro His Pro Ser Glu Gly Asn Asp
  72                               77                               82                               87

gag aag gct gaa gag gcg ggt gaa ggt cgg gga gac tcc act ggg gag      822

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Glu Lys Ala Glu Glu Ala Gly Glu Gly Arg Gly Asp Ser Thr Gly Glu  
88 93 98 103

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Ala Gly Ala Gly Gly Gly Val Glu Pro Ser Leu Glu His Leu Leu Asp  
104 109 114 119

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Ile Gln Gly Leu Pro Lys Arg Gln Ala Gly Ala Gly Ser Ser Ser Pro  
120 125 130 135

gag gcc ccc ctg aga tct gag gat agc acc tgc ctc cct ccc agc cct 966  
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136 141 146 151

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152 157 162 167

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Phe Pro Gly Gln Glu Ser Gln Met Lys Leu Ile Tyr Gln Gly Arg Leu  
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Cys Val Ile His Cys His Arg Ser Pro Pro Gly Ser Ala Val Pro Gly  
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232 237 242 247

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Val Asn Val Gly Ser Leu Met Val Pro Val Phe Val Val Leu Leu Gly  
248 253 258 263

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Val Val Trp Tyr Phe Arg Ile Asn Tyr Arg Gln Phe Phe Thr Ala Pro  
264 269 274 279

gcc act gtc tcc ctg gtg gga gtc acc ttc ttc ttc agc ttc cta gta 1398  
Ala Thr Val Ser Leu Val Gly Val Thr Phe Phe Phe Ser Phe Leu Val  
280 285 290 295

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Phe Gly Met Tyr Gly Arg \*  
296 301

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Met Lys Arg Lys Arg Met Lys
1 5

gcc aac att aag ctg gtt ggt tca gga ttt ccc ctt ccc tcc tct gat 160
Ala Asn Ile Lys Leu Val Gly Ser Gly Phe Pro Leu Pro Ser Ser Asp
8 13 18 23

ttg gat gac tct ctc act gaa gag ata gat gaa aag att gga ttc cga 208
Leu Asp Asp Ser Leu Thr Glu Glu Ile Asp Glu Lys Ile Gly Phe Arg
24 29 34 39

aat gat gca aat ttt gac tgg caa aat gtg gca gat ttc agg gat gca 256
Asn Asp Ala Asn Phe Asp Trp Gln Asn Val Ala Asp Phe Arg Asp Ala

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cag agt cct gaa ttt gaa att gag gag gag gaa gaa atg ttg tca tcc				352
Gln Ser Pro Glu Phe Glu Ile Glu Glu Glu Glu Glu Met Leu Ser Ser				
72	77	82	87	
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Val Ile Pro Asp Ser Arg Arg Glu Asn Glu Leu Pro Asp Phe Pro His				
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Ile Asp Glu Phe Phe Thr Leu Asn Ser Thr Pro Ser Arg Ser Ala Tyr				
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Asp Glu Pro His Leu Leu Val Asn Ile Glu Lys Gln Lys Leu Glu Leu				
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136	141	146	151	
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Glu Arg Leu Gln Ile Glu Lys Glu Arg Leu Arg His Leu Asp Met Glu				
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Lys Leu Arg Leu Gln Ile Val Asn Ser Glu Lys Pro Ser Leu Glu Asn				
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232	237	242	247	
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Glu Arg Leu Gln Val Glu Lys Asp Arg Leu Arg Ile Gln Lys Glu Gly				
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His Leu Gln *				
264				

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Val Lys Arg Ala Asn Cys Ser Leu Glu Leu Pro Pro Ala Ser Gly Pro
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Ala Lys Asp Ala Glu Glu Pro Ser Asn Lys Arg Val Lys Pro Leu Ser
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cga gtc acg tcg cta gca aac ctc atc ccg ccc gtg aag gcc acg cca      374
Arg Val Thr Ser Leu Ala Asn Leu Ile Pro Pro Val Lys Ala Thr Pro
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  76             81             86             91

gcc ccc tcg agc acg aaa cgg aga gat agc aag ctg tgg agt gag acc      518
Ala Pro Ser Ser Thr Lys Arg Arg Asp Ser Lys Leu Trp Ser Glu Thr
  92             97             102            107

ttc gat gtg tgc gtc aat cag atg ctt aca tcc aag gaa atc aaa cgt      566
Phe Asp Val Cys Val Asn Gln Met Leu Thr Ser Lys Glu Ile Lys Arg
  108            113            118            123

cag gag gcg atc ttt gag ctt tcc caa gga gaa gaa gac ttg ata gaa      614
Gln Glu Ala Ile Phe Glu Leu Ser Gln Gly Glu Glu Asp Leu Ile Glu
  124            129            134            139

gac ttg aaa tta gca aaa aag gcc tat cat gac ccc atg ctg aaa ctc      662
Asp Leu Lys Leu Ala Lys Lys Ala Tyr His Asp Pro Met Leu Lys Leu
  140            145            150            155

tcc ata atg aca gaa caa gag ttg aat caa att ttt gga aca ctg gac      710
Ser Ile Met Thr Glu Gln Glu Leu Asn Gln Ile Phe Gly Thr Leu Asp

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156	161	166	171	
tct cta att cct cta cat gaa gag ctc ctt agt cag ctt cga gat gtt				758
Ser Leu Ile Pro Leu His Glu Glu Leu Leu Ser Gln Leu Arg Asp Val				
172	177	182	187	
agg aag cct gat ggc tgc act gaa cat gtt ggt ccc atc ctc gtg ggc				806
Arg Lys Pro Asp Gly Ser Thr Glu His Val Gly Pro Ile Leu Val Gly				
188	193	198	203	
tgg ctc cct tgc ctc agc tcc tat gat agc tac tgc agc aat caa gta				854
Trp Leu Pro Cys Leu Ser Ser Tyr Asp Ser Tyr Cys Ser Asn Gln Val				
204	209	214	219	
gcc gcc aaa gct ctg ctg gac cac aaa aag caa gat cac cga gtc cag				902
Ala Ala Lys Ala Leu Leu Asp His Lys Lys Gln Asp His Arg Val Gln				
220	225	230	235	
gat ttc cta cag cga tgt tta gaa tcc ccc ttt agc cgc aaa cta gat				950
Asp Phe Leu Gln Arg Cys Leu Glu Ser Pro Phe Ser Arg Lys Leu Asp				
236	241	246	251	
ctc tgg aat ttc ctc gat att cca aga agc cgc ctg gta aaa tac cct				998
Leu Trp Asn Phe Leu Asp Ile Pro Arg Ser Arg Leu Val Lys Tyr Pro				
252	257	262	267	
ctg ctt ctc cga gaa atc ttg agg cac aca cca aat gat aat cca gat				1046
Leu Leu Leu Arg Glu Ile Leu Arg His Thr Pro Asn Asp Asn Pro Asp				
268	273	278	283	
cag cag cac ttg gaa gaa gct ata aat atc att cag gga att gtg gca				1094
Gln Gln His Leu Glu Glu Ala Ile Asn Ile Ile Gln Gly Ile Val Ala				
284	289	294	299	
gaa atc aac acc aag act ggt gaa tct gaa tgc cgc tat tat aaa gag				1142
Glu Ile Asn Thr Lys Thr Gly Glu Ser Glu Cys Arg Tyr Tyr Lys Glu				
300	305	310	315	
cgg ctt ctt tac ttg gaa gaa ggc cag aaa gac tcc ctg atc gac agc				1190
Arg Leu Leu Tyr Leu Glu Glu Gly Gln Lys Asp Ser Leu Ile Asp Ser				
316	321	326	331	
tct cga gtc ttg tgt tgt cat ggt gaa ctg aag aac aat cgg ggc gtg				1238
Ser Arg Val Leu Cys Cys His Gly Glu Leu Lys Asn Asn Arg Gly Val				
332	337	342	347	
aaa ctg cat gtt ttc ctg ttc caa gaa gtg ctt gtg atc act cga gcc				1286
Lys Leu His Val Phe Leu Phe Gln Glu Val Leu Val Ile Thr Arg Ala				
348	353	358	363	
gtc acc cac aat gag cag ctt tgc tac cag ctg tac cgt cag cca atc				1334
Val Thr His Asn Glu Gln Leu Cys Tyr Gln Leu Tyr Arg Gln Pro Ile				
364	369	374	379	
ccc gtg aaa gac ctc ctg ctg gaa gac ctc cag gat gga gaa gtg agg				1382
Pro Val Lys Asp Leu Leu Leu Glu Asp Leu Gln Asp Gly Glu Val Arg				
380	385	390	395	

ctg ggt ggc tcc ctg cga ggg gca ttc agc aac aat gag aga att aaa	1430
Leu Gly Gly Ser Leu Arg Gly Ala Phe Ser Asn Asn Glu Arg Ile Lys	
396 401 406 411	
aac ttc ttc aga gtc agt ttc aaa aat gga tcc caa agt cag acc cac	1478
Asn Phe Phe Arg Val Ser Phe Lys Asn Gly Ser Gln Ser Gln Thr His	
412 417 422 427	
tcg cta caa gcc aat gac act ttc aac aaa cag cag tgg ctt aac tgt	1526
Ser Leu Gln Ala Asn Asp Thr Phe Asn Lys Gln Gln Trp Leu Asn Cys	
428 433 438 443	
att cgt caa gcc aaa gaa aca gtt ttg tgt gct gcc ggg caa gct ggg	1574
Ile Arg Gln Ala Lys Glu Thr Val Leu Cys Ala Ala Gly Gln Ala Gly	
444 449 454 459	
gtg ctt gac tcc gag gga tcg ttc cta aat ccc acc acc ggg agc aga	1622
Val Leu Asp Ser Glu Gly Ser Phe Leu Asn Pro Thr Thr Gly Ser Arg	
460 465 470 475	
gag cta cag gga gaa aca aaa ctt gag cag atg gac caa tcg gac agt	1670
Glu Leu Gln Gly Glu Thr Lys Leu Glu Gln Met Asp Gln Ser Asp Ser	
476 481 486 491	
gag tca gac tgt agt atg gac acg agt gag gtc agc ctc gac tgt gag	1718
Glu Ser Asp Cys Ser Met Asp Thr Ser Glu Val Ser Leu Asp Cys Glu	
492 497 502 507	
cgc atg gaa cag aca gac tct tcc tgt gga aac agc agg cac ggt gaa	1766
Arg Met Glu Gln Thr Asp Ser Ser Cys Gly Asn Ser Arg His Gly Glu	
508 513 518 523	
agt aac gtc tga cag aagcatgtgc acttcgggaa gcaggcctgc atcttacctg	1821
Ser Asn Val *	
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ccaatctgtc tgtgtaagct ggaatctgtg gcaactatta ccctgtgttg tatttcccaa	2001
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Lys	Arg	Lys	Gly	Ala	Gly	Val	Leu	
4			9				14	19
ctc	tgc	cct	ccg	ccc	tct	tct	ccc	150
Leu	Cys	Pro	Pro	Pro	Ser	Ser	Pro	
20			25				30	35
gct	ggc	ggg	gac	gct	gtc	cga	gcc	198
Ala	Gly	Gly	Asp	Ala	Val	Arg	Ala	
36			41				46	51
cag	cag	cag	cat	gaa	tgt	ggc	gac	246
Gln	Gln	Gln	His	Glu	Cys	Gly	Asp	
52			57				62	67
aac	ccc	tgc	gac	tgt	cac	agg	gag	294
Asn	Pro	Cys	Asp	Cys	His	Arg	Glu	
68			73				78	83
aac	cag	ctg	ccg	ccg	tcc	atc	ctg	342
Asn	Gln	Leu	Pro	Pro	Ser	Ile	Leu	
84			89				94	99
ctg	gat	gag	cgt	tgc	ctt	tcc	gca	390
Leu	Asp	Glu	Arg	Cys	Leu	Ser	Ala	
100			105				110	115
gac	ctt	tgt	tta	gac	ttc	cag	ttt	438
Asp	Leu	Cys	Leu	Asp	Phe	Gln	Phe	
116			121				126	131
cgt	cag	cag	gtc	act	gat	gaa	ttg	486
Arg	Gln	Gln	Val	Thr	Asp	Glu	Leu	
132			137				142	147
cag	aat	ata	att	gaa	atc	aac	att	534
Gln	Asn	Ile	Ile	Glu	Ile	Asn	Ile	
148			153				158	163
aat	ggc	gta	tgt	gtt	tta	gca	ttt	582
Asn	Gly	Val	Cys	Val	Leu	Ala	Phe	
164			169				174	179
aca	gcc	tac	agg	tgt	aaa	cag	ott	630
Thr	Ala	Tyr	Arg	Cys	Lys	Gln	Leu	
180			185				190	195
gcc	tct	cac	tgt	cct	tta	ctt	cag	678
Ala	Ser	His	Cys	Pro	Leu	Leu	Gln	
							Lys	
							Val	
							His	
							Val	
							Gly	
							Asn	
							Gln	
							Asp	



196	201	206	211		
aaa ctc act gat gaa	gga ctc aag cag ctg	ggc tca aaa tgc aga	gaa	726	
Lys Leu Thr Asp Glu	Gly Leu Lys Gln Leu	Gly Ser Lys Cys Arg	Glu		
212	217	222	227		
ctc aaa gat att cat	ttc ggc cag tgt tac	aag atc tca gat gaa	ggc	774	
Leu Lys Asp Ile His	Phe Gly Gln Cys Tyr	Lys Ile Ser Asp Glu	Gly		
228	233	238	243		
atg atc gtc ata gct	aag ggc tgt ctg aaa	tta caa agg ata tac	atg	822	
Met Ile Val Ile Ala	Lys Gly Cys Leu Lys	Leu Gln Arg Ile Tyr	Met		
244	249	254	259		
cag gaa aac aaa tta	gtg aca gat cag tca	gtg aaa gca ttt gct	gaa	870	
Gln Glu Asn Lys Leu	Val Thr Asp Gln Ser	Val Lys Ala Phe Ala	Glu		
260	265	270	275		
cac tgt cct gag ctt	caa tat gta ggc ttc	atg ggt tgt tca gtc	act	918	
His Cys Pro Glu Leu	Gln Tyr Val Gly Phe	Met Gly Cys Ser Val	Thr		
276	281	286	291		
tct aaa gga gtc att	cac cta acc aag cta	aga aac ctt tcc agc	ttg	966	
Ser Lys Gly Val Ile	His Leu Thr Lys Leu	Arg Asn Leu Ser Ser	Leu		
292	297	302	307		
gac cta cgt cat atc	act gaa ctg gat aat	gaa acc gtg atg gaa	att	1014	
Asp Leu Arg His Ile	Thr Glu Leu Asp Asn	Glu Thr Val Met Glu	Ile		
308	313	318	323		
gtc aag agg tgc aaa	aat ctt agc tct ctc	aat ctc tgt ctg aac	tg	1062	
Val Lys Arg Cys Lys	Asn Leu Ser Ser Leu	Asn Leu Cys Leu Asn	Trp		
324	329	334	339		
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Ile Ile Asn Asp Arg	Cys Val Glu Val Ile	Ala Lys Glu Gly Gln	Asn		
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Leu Lys Glu Leu Tyr	Leu Val Ser Cys Lys	Ile Thr Asp Tyr Ala	Leu		
356	361	366	371		
ata gcc att ggg cga	tac agc atg aca ata	gag act gtg gat gtc	gga	1206	
Ile Ala Ile Gly Arg	Tyr Ser Met Thr Ile	Glu Thr Val Asp Val	Gly		
372	377	382	387		
tg	tg	aaa gaa atc aca	gac caa gga gcc acc	ctg att gca cag agc	1254
Trp Cys Lys Glu Ile	Thr Asp Gln Gly Ala	Thr Leu Ile Ala Gln	Ser		
388	393	398	403		
agc aag tct ctg aga	tat ttg ggg ctg atg	aga tgt gat aaa gtc	aac	1302	
Ser Lys Ser Leu Arg	Tyr Leu Gly Leu Met	Arg Cys Asp Lys Val	Asn		
404	409	414	419		
gaa gtg acg gtg gaa	cag ctg gtg cag cag	tac ccc cac atc acc	ttc	1350	
Glu Val Thr Val Glu	Gln Leu Val Gln Gln	Tyr Pro His Ile Thr	Phe		
420	425	430	435		

agc acc gtc ctg cag gac tgc aag agg acc ttg gag aga gcc tat cag 1398  
 Ser Thr Val Leu Gln Asp Cys Lys Arg Thr Leu Glu Arg Ala Tyr Gln  
 436 441 446 451

atg ggc tgg acc ccc aac atg tct gcc gcc tcc tcc tag cgctcctgcc 1447  
 Met Gly Trp Thr Pro Asn Met Ser Ala Ala Ser Ser \*  
 452 457 462

tcgcctagtc cactgggatac attcagcaga gcagaggaga attgtacatt tggggagctg 1507

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 ggggtcaggg ccgggggcga atgtggctcg cgttctaggc ctccctgggt tggaaaaaga 180  
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 Met Ser Leu Pro Leu Thr Glu Glu Gln  
 1 5

agg aaa aag att gaa gag aat cga caa aag gct ctg gcc cgc aga gct 338  
 Arg Lys Lys Ile Glu Glu Asn Arg Gln Lys Ala Leu Ala Arg Arg Ala  
 10 15 20 25

gag aag tta ttg gca gaa cag cat cag agg act agc tcg ggc acc tcc 386  
 Glu Lys Leu Leu Ala Glu Gln His Gln Arg Thr Ser Ser Gly Thr Ser  
 26 31 36 41

att gct ggc aac cca ttc cag gcc aag caa ggc cca tcc caa aat ttc 434  
 Ile Ala Gly Asn Pro Phe Gln Ala Lys Gln Gly Pro Ser Gln Asn Phe  
 42 47 52 57

cca agg gag tct tgt aag cca gtg agc cat ggt gtc att ttc aag caa 482  
 Pro Arg Glu Ser Cys Lys Pro Val Ser His Gly Val Ile Phe Lys Gln  
 58 63 68 73

cag aat ctc agt agc tca tct aat gct gac caa aga cct cat gat tcc 530  
 Gln Asn Leu Ser Ser Ser Ser Asn Ala Asp Gln Arg Pro His Asp Ser  
 74 79 84 89

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aca gcc tgc cca ggc cac agt cca cgt agt caa atg gct ctc act gga Thr Ala Cys Pro Gly His Ser Pro Arg Ser Gln Met Ala Leu Thr Gly 106 111 116 121	626
atc tct cct ccc ttg gca caa agt cct cca gag gtc cct aaa caa cag Ile Ser Pro Pro Leu Ala Gln Ser Pro Pro Glu Val Pro Lys Gln Gln 122 127 132 137	674
ctc ttg agt tat gag tta ggt caa ggt cat gct cag gct tca cct gag Leu Leu Ser Tyr Glu Leu Gly Gln Gly His Ala Gln Ala Ser Pro Glu 138 143 148 153	722
atc agg ttc aca ccc ttt gct aac cca act cat aag cct ctg gcc aaa Ile Arg Phe Thr Pro Phe Ala Asn Pro Thr His Lys Pro Leu Ala Lys 154 159 164 169	770
cca aag agt tcc caa gag aca cca gct cat tcc tct gga cag cct ccc Pro Lys Ser Ser Gln Glu Thr Pro Ala His Ser Ser Gly Gln Pro Pro 170 175 180 185	818
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314 319 324 329	
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330 335 340 345	
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Asp Ile Ser Tyr Ser Gln Asp Leu Ile Ala Leu Phe Lys Gln Met Asp	
346 351 356 361	
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Ser Arg Arg Tyr Asp Val Lys Thr Arg Lys Trp Ser Phe Leu Leu Glu	
362 367 372 377	
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Glu His Ser Lys Leu Ile Ala Lys Val Arg Cys Leu Pro Gln Val Gln	
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Lys Lys Thr Ser Leu Ser Leu Thr Pro Asp Val Pro Glu Ala Asp Leu	
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Ser Glu Val Asp Pro Lys Leu Val Ser Asn Leu Met Pro Phe Gln Arg	
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442 447 452 457	
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Phe Tyr Arg Lys Glu Trp Pro Leu Leu Val Val Val Pro Ser Ser Val	
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Gly Leu Ile Asn Ile Val Ser Phe Asp Leu Leu Ser Lys Leu Glu Lys	
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570 575 580 585	
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Met Pro Trp Gly Trp Asp Tyr Ser Gly Ser Ser Asn Leu Gly Glu Leu	
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Lys Leu Leu Leu Glu Glu Ala Val Met Leu Arg Arg Leu Lys Ser Asp	
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Val Leu Ser Gln Leu Pro Ala Lys Gln Arg Lys Ile Val Val Ile Ala	
650 655 660 665	
cca gga cgg atc aat gcc agg acc aga gct gcc ctg gat gct gca gcc	2306
Pro Gly Arg Ile Asn Ala Arg Thr Arg Ala Ala Leu Asp Ala Ala Ala	
666 671 676 681	
aag gaa atg acc acc aag gac aaa act aaa cag cag cag aaa gat gcc	2354
Lys Glu Met Thr Thr Lys Asp Lys Thr Lys Gln Gln Gln Lys Asp Ala	
682 687 692 697	
ctc att ctc ttc ttc aac aga aca gct gaa gct aaa atc cca tct gtc	2402
Leu Ile Leu Phe Phe Asn Arg Thr Ala Glu Ala Lys Ile Pro Ser Val	
698 703 708 713	
att gaa tat atc ttg gac cta ctg gaa agt gga aga gag aag ttt tta	2450
Ile Glu Tyr Ile Leu Asp Leu Leu Glu Ser Gly Arg Glu Lys Phe Leu	
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gta ttt gca cac cat aag gtg gtc ctg gac gca att acg caa gag ctt	2498
Val Phe Ala His His Lys Val Val Leu Asp Ala Ile Thr Gln Glu Leu	
730 735 740 745	
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Glu Arg Lys His Val Gln His Ile Arg Ile Asp Gly Ser Thr Ser Ser	
746 751 756 761	
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Ala Glu Arg Glu Asp Leu Cys Gln Gln Phe Gln Leu Ser Glu Arg His	

762	767	772	777	
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778	783	788	793	
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Val Leu Ile Gln Ala Glu Asp Arg Val His Arg Ile Gly Gln Thr Ser				
810	815	820	825	
tcc gtg ggc att cac tac ctc gtg gca aag ggc aca gct gat gac tac				2786
Ser Val Gly Ile His Tyr Leu Val Ala Lys Gly Thr Ala Asp Asp Tyr				
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842	847	852	857	
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Leu Ser Glu Thr Asn Phe Ser Glu Met Thr Glu Ser Thr Asp Tyr Leu				
858	863	868	873	
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Tyr Lys Asp Pro Lys Gln Gln Lys Ile Tyr Asp Leu Phe Gln Lys Ser				
874	879	884	889	
ttt gag aaa gaa gga agt gat atg gag ctc ctg gaa gca gca gag tcc				2978
Phe Glu Lys Glu Gly Ser Asp Met Glu Leu Leu Glu Ala Ala Glu Ser				
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Phe Asp Pro Gly Ser Ala Ser Gly Thr Ser Gly Ser Ser Ser Gln Asn				
906	911	916	921	
atg gga gac acc ctg gat gaa agc tca ttg aca gcc agt cca cag aag				3074
Met Gly Asp Thr Leu Asp Glu Ser Ser Leu Thr Ala Ser Pro Gln Lys				
922	927	932	937	
aaa agg aga ttt gaa ttt ttt gat aac tgg gac agc ttt acg tct ccc				3122
Lys Arg Arg Phe Glu Phe Phe Asp Asn Trp Asp Ser Phe Thr Ser Pro				
938	943	948	953	
ctg taa aaggggcaaa aagaaaaaaa taaaaagcat tttaaaatca tggaattgaa				3178
Leu *				
954				
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<212> DNA  
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 <222> (366)..(827)

<400> 87

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ggccagggta tgcgaggcct tggaggccag catgcagtct aggatgaggc ctcctacctt      180
cagcctgcct gagggccagg agctggaggg aggcgagtga aggcccttct tcccgtgcct      240
gcagtaatgg ctcccaggac acctttgaag catgttacag cggcacgtcc acaccttctt      300
tccatggctc ccaactgcagc ggcagcgacc acagcagtct gggettgagg cagttacagg      360
attac      atg gtc acg ttg cgg agt aag ctg ggg ccc ctc gag atc cag      407
            Met Val Thr Leu Arg Ser Lys Leu Gly Pro Leu Glu Ile Gln
            1              5              10

cag ttt gcg atg ctg ctg cgg gag tac cgg ctg ggg ctg ccc atc cag      455
Gln Phe Ala Met Leu Leu Arg Glu Tyr Arg Leu Gly Leu Pro Ile Gln
15              20              25              30

gac tat tgc aca ggc ctg ctg aag ctc tac gga gac cgg cgc aag ttc      503
Asp Tyr Cys Thr Gly Leu Leu Lys Leu Tyr Gly Asp Arg Arg Lys Phe
31              36              41              46

ctc ctc ctt ggg atg cgg ccc ttc atc ccg gac cag gac atc ggc tac      551
Leu Leu Leu Gly Met Arg Pro Phe Ile Pro Asp Gln Asp Ile Gly Tyr
47              52              57              62

ttc gag ggc ttc ctg gag ggc gtg ggc atc cgc gag ggc ggc atc ctc      599
Phe Glu Gly Phe Leu Glu Gly Val Gly Ile Arg Glu Gly Gly Ile Leu
63              68              73              78

act gac agc ttc ggc cgc atc aag cgc agc atg agc tcc acg tcg gcc      647
Thr Asp Ser Phe Gly Arg Ile Lys Arg Ser Met Ser Ser Thr Ser Ala
79              84              89              94

tcc gca gtg cgc agc tac gat ggc gcg gcg cag cgg ccc gag gca cag      695
Ser Ala Val Arg Ser Tyr Asp Gly Ala Ala Gln Arg Pro Glu Ala Gln
95              100              105              110

gcc ttc cac cgg ctg ctg gct gac atc acg cac gac atc gag gcg ctg      743
Ala Phe His Arg Leu Leu Ala Asp Ile Thr His Asp Ile Glu Ala Leu
111              116              121              126

gcc ccc gat gac gac gac gac gag gat gag ccc cgg ggt cac agg      791
Ala Pro Asp Asp Asp Asp Asp Asp Glu Asp Glu Pro Arg Gly His Arg
127              132              137              142

ggc ggg acc gac ccc gca gaa gac aac tac ctg tag ccac cgcccctgcg      841

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 Met Lys Glu Pro Ala Ala Cys Ser Val Arg Gly Gly Thr Arg Leu  
 1 5 10

ccg gcg gtg ggt cta gct ggg gga ggt cgg gcc atg ctg gtg ggc cag 156  
 Pro Ala Val Gly Leu Ala Gly Gly Gly Arg Ala Met Leu Val Gly Gln  
 16 21 26 31

ggc gcg ggg ctg ctg ggg ccc gcg gtg gtc acc gcc gcg gtg gtg ctg 204  
 Gly Ala Gly Leu Leu Gly Pro Ala Val Val Thr Ala Ala Val Val Leu  
 32 37 42 47

ctg ctg agc ggc gtg ggg ccg gcg cac ggc tcg gag gac atc gtg gtg 252  
 Leu Leu Ser Gly Val Gly Pro Ala His Gly Ser Glu Asp Ile Val Val  
 48 53 58 63

ggc tgc ggt ggc ttc gtc aag tcg gac gtg gag atc aac tac tct ctc 300  
 Gly Cys Gly Gly Phe Val Lys Ser Asp Val Glu Ile Asn Tyr Ser Leu  
 64 69 74 79

atc gag ata aag ctg tac acc aag cat ggg act ttg aaa tac cag aca 348  
 Ile Glu Ile Lys Leu Tyr Thr Lys His Gly Thr Leu Lys Tyr Gln Thr  
 80 85 90 95

gac tgt gcc cct aat aat ggt tac ttt atg atc cct ttg tat gat aag 396  
 Asp Cys Ala Pro Asn Asn Gly Tyr Phe Met Ile Pro Leu Tyr Asp Lys  
 96 101 106 111

ggg gat ttc att ctg aag att gag cct ccc cta ggg tgg agt ttt gag 444  
 Gly Asp Phe Ile Leu Lys Ile Glu Pro Pro Leu Gly Trp Ser Phe Glu  
 112 117 122 127

ccg acg acc gtg gag ctc cat gtg gat gga gtc agt gac atc tgc aca 492  
 Pro Thr Thr Val Glu Leu His Val Asp Gly Val Ser Asp Ile Cys Thr  
 128 133 138 / 143

aag ggt ggg gac atc aac ttt gtc ttc act ggg ttc tct gtg aat ggc 540



Lys Gly Gly Asp Ile Asn Phe Val Phe Thr Gly Phe Ser Val Asn Gly	
144 149 154 159	
aag gtc ctc agc aaa ggg cag ccc ctg ggt cct gcg gga gtt cag gtg	588
Lys Val Leu Ser Lys Gly Gln Pro Leu Gly Pro Ala Gly Val Gln Val	
160 165 170 175	
tct ctg aga aac act ggg acc gaa gca aag atc cag tcc aca gtt aca	636
Ser Leu Arg Asn Thr Gly Thr Glu Ala Lys Ile Gln Ser Thr Val Thr	
176 181 186 191	
cag cct ggc gga aag ttt gca ttt ttt aaa gtt ctg cct gga gat tat	684
Gln Pro Gly Gly Lys Phe Ala Phe Phe Lys Val Leu Pro Gly Asp Tyr	
192 197 202 207	
gaa atc ctc gca act cat cca acc tgg gcg ttg aaa gag gca agc acc	732
Glu Ile Leu Ala Thr His Pro Thr Trp Ala Leu Lys Glu Ala Ser Thr	
208 213 218 223	
aca gtg cgt gta acc aac tcc aat gcc aat gcg gcc agt ccc ctc ata	780
Thr Val Arg Val Thr Asn Ser Asn Ala Asn Ala Ala Ser Pro Leu Ile	
224 229 234 239	
gtt gct ggc tac aat gtg tct ggc tct gtc cga agt gat ggg gag ccc	828
Val Ala Gly Tyr Asn Val Ser Gly Ser Val Arg Ser Asp Gly Glu Pro	
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Met Lys Gly Val Lys Phe Leu Leu Phe Ser Ser Leu Val Thr Lys Glu	
256 261 266 271	
gat gtc ctg ggc tgc aat gtc tca cca gtg cct ggg ttc cag ccc caa	924
Asp Val Leu Gly Cys Asn Val Ser Pro Val Pro Gly Phe Gln Pro Gln	
272 277 282 287	
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Asp Glu Ser Leu Val Tyr Leu Cys Tyr Thr Val Ser Arg Glu Asp Gly	
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Ser Phe Ser Phe Tyr Ser Leu Pro Ser Gly Gly Tyr Thr Val Ile Pro	
304 309 314 319	
ttc tat cga ggg gag agg att acc ttt gat gtg gcg cct tcc aga ctt	1068
Phe Tyr Arg Gly Glu Arg Ile Thr Phe Asp Val Ala Pro Ser Arg Leu	
320 325 330 335	
gac ttc aca gtg gag cat gac agc ttg aaa atc gag ccc gtg ttc cac	1116
Asp Phe Thr Val Glu His Asp Ser Leu Lys Ile Glu Pro Val Phe His	
336 341 346 351	
gtc atg gga ttc tcc gtc acc ggg agg gtc ttg aac gga ccc gaa gga	1164
Val Met Gly Phe Ser Val Thr Gly Arg Val Leu Asn Gly Pro Glu Gly	
352 357 362 367	
gat ggt gtt cca gaa gca gta gtc acc ctg aat aac caa atc aaa gtt	1212
Asp Gly Val Pro Glu Ala Val Val Thr Leu Asn Asn Gln Ile Lys Val	

368	373	378	383	
aaa aca aaa gct gat	ggc tca ttc cgc ctt	gag aac ata acc aca ggg	1260	
Lys Thr Lys Ala Asp	Gly Ser Phe Arg Leu	Glu Asn Ile Thr Thr Gly		
384	389	394	399	
aca tac acc atc cat	gct cag aaa gag cac	ctc tac ttt gaa acg gtc	1308	
Thr Tyr Thr Ile His	Ala Gln Lys Glu His	Leu Tyr Phe Glu Thr Val		
400	405	410	415	
acc atc aaa att gca	cgc aac aca cct cag	ctg gct gac att gtt gca	1356	
Thr Ile Lys Ile Ala	Pro Asn Thr Pro Gln	Leu Ala Asp Ile Val Ala		
416	421	426	431	
aca ggg ttc agt gtc	tgt ggt cgg ata tca	atc att cgc ttc ccc gac	1404	
Thr Gly Phe Ser Val	Cys Gly Arg Ile Ser	Ile Ile Arg Phe Pro Asp		
432	437	442	447	
acc gtc aag cag atg	aat aaa tac aaa gtt	gtc ctg tca tct caa gac	1452	
Thr Val Lys Gln Met	Asn Lys Tyr Lys Val	Val Leu Ser Ser Gln Asp		
448	453	458	463	
aag gac aag tct ttg	gtc acc gtg gag aca	gat gct cat gga tca ttt	1500	
Lys Asp Lys Ser Leu	Val Thr Val Glu Thr	Asp Ala His Gly Ser Phe		
464	469	474	479	
tgt ttt aaa gca aaa	cca ggg act tac aaa	gtg cag gtg atg gtt cct	1548	
Cys Phe Lys Ala Lys	Pro Gly Thr Tyr Lys	Val Gln Val Met Val Pro		
480	485	490	495	
gag gca gaa acc aga	gca ggg ctg acg ttg	aaa ccc cag aca ttt cct	1596	
Glu Ala Glu Thr Arg	Ala Gly Leu Thr Leu	Lys Pro Gln Thr Phe Pro		
496	501	506	511	
ctt act gtg acc aac	agg ccc atg atg gat	gtg gcc ttt gta cag ttc	1644	
Leu Thr Val Thr Asn	Arg Pro Met Met Asp	Val Ala Phe Val Gln Phe		
512	517	522	527	
ttg gca tca gtt tct	ggg aaa gtc tct tgt	ttg gac acc tgt ggt gac	1692	
Leu Ala Ser Val Ser	Gly Lys Val Ser Cys	Leu Asp Thr Cys Gly Asp		
528	533	538	543	
ttg ctg gtg act cta	cag tcc ctg agc cgc	cag ggt gag aag cgg agc	1740	
Leu Leu Val Thr Leu	Gln Ser Leu Ser Arg	Gln Gly Glu Lys Arg Ser		
544	549	554	559	
ctc cag ctc tcc ggc	aag gtc aac gcc atg	act ttc acc ttt gac aac	1788	
Leu Gln Leu Ser Gly	Lys Val Asn Ala Met	Thr Phe Thr Phe Asp Asn		
560	565	570	575	
gtg ctc cct gga aaa	tac aaa ata agc atc	atg cat gag gat tgg tgc	1836	
Val Leu Pro Gly Lys	Tyr Lys Ile Ser Ile	Met His Glu Asp Trp Cys		
576	581	586	591	
tgg aag aac aag agc	ctg gag gtg gaa gtg	ctg gag gat gac atg tct	1884	
Trp Lys Asn Lys Ser	Leu Glu Val Glu Val	Leu Glu Asp Asp Met Ser		
592	597	602	607	

gca gtt gag ttc agg cag acg ggc tac atg ctg aga tgt tcc ctg tct	1932
Ala Val Glu Phe Arg Gln Thr Gly Tyr Met Leu Arg Cys Ser Leu Ser	
608 613 618 623	
cac gcc atc act ctg gaa ttt tat cag gat gga aat ggg cgt gag aat	1980
His Ala Ile Thr Leu Glu Phe Tyr Gln Asp Gly Asn Gly Arg Glu Asn	
624 629 634 639	
gtg ggg att tat aac ctc tcc aaa gga gtc aac cga ttc tgc ctg tcc	2028
Val Gly Ile Tyr Asn Leu Ser Lys Gly Val Asn Arg Phe Cys Leu Ser	
640 645 650 655	
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Lys Pro Gly Val Tyr Lys Val Thr Pro Arg Ser Cys His Arg Phe Glu	
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Gln Ala Phe Tyr Ile Tyr Asp Thr Ser Ser Pro Ser Ile Leu Thr Leu	
672 677 682 687	
aca gcc att cgc cac cat gtc ctt gga act atc acc acc gac aaa atg	2172
Thr Ala Ile Arg His His Val Leu Gly Thr Ile Thr Thr Asp Lys Met	
688 693 698 703	
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Met Asp Val Thr Val Thr Ile Lys Ser Ser Ile Asp Ser Glu Pro Ala	
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Leu Val Leu Gly Pro Leu Lys Ser Val Gln Glu Leu Arg Arg Glu Gln	
720 725 730 735	
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Gln Leu Ala Glu Ile Glu Ala Arg Arg Gln Glu Arg Glu Lys Asn Gly	
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aat gag gaa ggc gaa gaa aga atg acc aag cct ccc gtg cag gag atg	2364
Asn Glu Glu Gly Glu Glu Arg Met Thr Lys Pro Pro Val Gln Glu Met	
752 757 762 767	
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Val Asp Glu Leu Gln Gly Pro Phe Ser Tyr Asp Phe Ser Tyr Trp Ala	
768 773 778 783	
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Arg Ser Gly Glu Lys Ile Thr Val Thr Pro Ser Ser Lys Glu Leu Leu	
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Phe Tyr Pro Pro Ser Met Glu Ala Val Val Ser Gly Glu Ser Cys Pro	
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Gly Lys Leu Ile Glu Ile His Gly Lys Ala Gly Leu Phe Leu Glu Gly	
816 821 826 831	

cag atc cac ccc gag ttg gaa gga gtc gag att gtc atc agt gaa aag Gln Ile His Pro Glu Leu Glu Gly Val Glu Ile Val Ile Ser Glu Lys 832 837 842 847	2604
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ttc aag gcc tat gcc ctg gca ggc gta agc ttt gag ata aaa gct gag Phe Lys Ala Tyr Ala Leu Ala Gly Val Ser Phe Glu Ile Lys Ala Glu 896 901 906 911	2796
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aac ctg agc cct ggc cag tat tac ttc aaa ccc atg atg aag gag ttc Asn Leu Ser Pro Gly Gln Tyr Tyr Phe Lys Pro Met Met Lys Glu Phe 944 949 954 959	2940
cgg ttt gag cca tcc tca cag atg atc gag gtg cag gaa ggc cag aac Arg Phe Glu Pro Ser Ser Gln Met Ile Glu Val Gln Glu Gly Gln Asn 960 965 970 975	2988
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gac gaa gag ggc aag ttc aga tta cgt gga ttg ctg ccg gga tgt gtg Asp Glu Glu Gly Lys Phe Arg Leu Arg Gly Leu Leu Pro Gly Cys Val 1024 1029 1034 1039	3180
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Leu Pro His His Arg Val Ile Glu Val Gly Asn Asn Asp Ile Asp Asp	
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Asn Val Ile Thr Ser Ser Glu Tyr Leu Pro Thr Leu Trp Val Lys Leu	
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Tyr Lys Ser Glu Asn Leu Asp Asn Pro Ile Gln Thr Val Ser Leu Gly	
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Gln Ser Leu Phe Phe His Phe Pro Pro Leu Leu Arg Asp Gly Glu Asn	
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Tyr Val Val Leu Leu Asp Ser Thr Leu Pro Arg Ser Gln Tyr Asp Tyr	
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Ile Leu Pro Gln Val Ser Phe Thr Ala Val Gly Tyr His Lys His Ile	
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Gln Gly Ser Tyr Ile Ala Leu Pro Leu Thr Leu Leu Val Leu Leu Ala	
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Gly Tyr Asn His Asp Lys Leu Ile Pro Leu Leu Leu Gln Leu Thr Ser	
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1216 1221 1226 1231	
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Gly Pro Glu Asp Ala Lys Arg Gln Ala Lys Lys Gln Lys Thr Arg Arg	
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Thr *	
1248	
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gtgctgctgg gcccgacccc catgtccctt gtcactgtgg catcctgcac ccacccctac	3980
ccctccgtag agccccctgt gcaatgcaat gaatggaccc tcctgtcact ctgctgaaca	4040

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 Met Ala Ala  
 1  
 gcc tct gcg gtg tcg gtg ctg ctg gtg gcg gcg gag agg aac cgg tgg 223  
 Ala Ser Ala Val Ser Val Leu Leu Val Ala Ala Glu Arg Asn Arg Trp  
 4 9 14 19  
 cat cgt ctc ccg agc ctg ctc ctg ccg ccg agg aca tgg gtg tgg agg 271  
 His Arg Leu Pro Ser Leu Leu Leu Pro Pro Arg Thr Trp Val Trp Arg  
 20 25 30 35  
 caa aga acc atg aag tac aca aca gcc aca gga aga aac att acc aag 319  
 Gln Arg Thr Met Lys Tyr Thr Thr Ala Thr Gly Arg Asn Ile Thr Lys  
 36 41 46 51  
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 Val Leu Ile Ala Asn Arg Gly Glu Ile Ala Cys Arg Val Met Arg Thr  
 52 57 62 67  
 gcc aaa aaa ctg ggt gta cag act gtg gcg gtt tat agt gag gct gac 415  
 Ala Lys Lys Leu Gly Val Gln Thr Val Ala Val Tyr Ser Glu Ala Asp  
 68 73 78 83  
 aga aat tcc atg cat gta gat atg gca gat gaa gca tat tcc atc ggc 463  
 Arg Asn Ser Met His Val Asp Met Ala Asp Glu Ala Tyr Ser Ile Gly  
 84 89 94 99  
 ccc gct ccc tcc cag cag agc tac cta tct atg gag aaa atc att caa 511  
 Pro Ala Pro Ser Gln Gln Ser Tyr Leu Ser Met Glu Lys Ile Ile Gln

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Val Ala Lys Thr Ser	Ala Ala Gln Ala Ile	His Pro Gly Cys Gly Phe		
116	121	126	131	
ctt tca gaa aac atg	gaa ttt gct gaa ctt	tgt aag caa gaa gga att	607	
Leu Ser Glu Asn Met	Glu Phe Ala Glu Leu	Cys Lys Gln Glu Gly Ile		
132	137	142	147	
att ttt ata ggc cct	cct cca tct gca att	aga gac atg ggt ata aag	655	
Ile Phe Ile Gly Pro	Pro Pro Ser Ala Ile	Arg Asp Met Gly Ile Lys		
148	153	158	163	
agc aca tcc aaa tcc	ata atg gct gct gct	gga gta cct gtt gtg gag	703	
Ser Thr Ser Lys Ser	Ile Met Ala Ala Ala	Gly Val Pro Val Val Glu		
164	169	174	179	
ggt tat cat ggt gag	gac caa tca gac cag	tgc ctg aag gaa cac gcc	751	
Gly Tyr His Gly Glu	Asp Gln Ser Asp Gln	Cys Leu Lys Glu His Ala		
180	185	190	195	
agg aga att ggc tat	cct gtc atg att aaa	gcc gtc cgg ggt gga gga	799	
Arg Arg Ile Gly Tyr	Pro Val Met Ile Lys	Ala Val Arg Gly Gly Gly		
196	201	206	211	
gga aaa gga atg agg	att gtt aga tca gaa	caa gaa ttt caa gaa cag	847	
Gly Lys Gly Met Arg	Ile Val Arg Ser Glu	Gln Glu Phe Gln Glu Gln		
212	217	222	227	
tta gag tca gca cgg	aga gaa gct aag aag	tct ttc aat gat gat gct	895	
Leu Glu Ser Ala Arg	Arg Glu Ala Lys Lys	Ser Phe Asn Asp Asp Ala		
228	233	238	243	
atg ctg atc gag aag	ttt gta gac aca ccg	agg cat gta gaa gtc cag	943	
Met Leu Ile Glu Lys	Phe Val Asp Thr Pro	Arg His Val Glu Val Gln		
244	249	254	259	
gtg ttt ggt gat cac	cat ggc aat gct gtg	tac ttg ttt gaa aga gac	991	
Val Phe Gly Asp His	His Gly Asn Ala Val	Tyr Leu Phe Glu Arg Asp		
260	265	270	275	
tgt agt gtg cag agg	cga cat cag aag atc	att gag gag gcc cca gcg	1039	
Cys Ser Val Gln Arg	Arg His Gln Lys Ile	Ile Glu Glu Ala Pro Ala		
276	281	286	291	
cct ggt att aaa tct	gaa gta aga aaa aag	ctg gga gaa gct gca gtc	1087	
Pro Gly Ile Lys Ser	Glu Val Arg Lys Lys	Leu Gly Glu Ala Ala Val		
292	297	302	307	
aga gct gct aaa gct	gta aat tat gtt gga	gca ggg act gtg gag ttt	1135	
Arg Ala Ala Lys Ala	Val Asn Tyr Val Gly	Ala Gly Thr Val Glu Phe		
308	313	318	323	
att atg gac tca aaa	cat aat ttc tgt ttc	atg gag atg aat aca agg	1183	
Ile Met Asp Ser Lys	His Asn Phe Cys Phe	Met Glu Met Asn Thr Arg		
324	329	334	339	

ctg caa gtg gaa cat cct gtt act gag atg atc aca gga act gac ttg	1231
Leu Gln Val Glu His Pro Val Thr Glu Met Ile Thr Gly Thr Asp Leu	
340 345 350 355	
gtg gag tgg cag ctt aga att gca gca gga gag aag att cct ttg agc	1279
Val Glu Trp Gln Leu Arg Ile Ala Ala Gly Glu Lys Ile Pro Leu Ser	
356 361 366 371	
cag gaa gaa ata act ctg cag ggc cat gcc ttc gaa gct aga ata tat	1327
Gln Glu Glu Ile Thr Leu Gln Gly His Ala Phe Glu Ala Arg Ile Tyr	
372 377 382 387	
gca gaa gat cct agc aat aac ttc atg cct gtg gca ggc cca tta gtg	1375
Ala Glu Asp Pro Ser Asn Asn Phe Met Pro Val Ala Gly Pro Leu Val	
388 393 398 403	
cac ctc tct act cct cga gca gac cct tcc acc agg att gaa act gga	1423
His Leu Ser Thr Pro Arg Ala Asp Pro Ser Thr Arg Ile Glu Thr Gly	
404 409 414 419	
gta cgg caa gga gac gaa gtt tcc gtg cat tat gac ccc atg att gcg	1471
Val Arg Gln Gly Asp Glu Val Ser Val His Tyr Asp Pro Met Ile Ala	
420 425 430 435	
aag ctg gtc gtg tgg gca gca gat cgc cag gcg gca ttg aca aaa ctg	1519
Lys Leu Val Val Trp Ala Ala Asp Arg Gln Ala Ala Leu Thr Lys Leu	
436 441 446 451	
agg tac agc ctt cgt cag tac aat att gtt gga ctg ccc acc aac att	1567
Arg Tyr Ser Leu Arg Gln Tyr Asn Ile Val Gly Leu Pro Thr Asn Ile	
452 457 462 467	
gac ttc tta ctc aac ctg tct ggc cac cca gag ttt gaa gct ggg aac	1615
Asp Phe Leu Leu Asn Leu Ser Gly His Pro Glu Phe Glu Ala Gly Asn	
468 473 478 483	
gtg cac act gat ttc atc cct caa cac cac aaa cag ttg ttg ctc agt	1663
Val His Thr Asp Phe Ile Pro Gln His His Lys Gln Leu Leu Ser	
484 489 494 499	
cgg aag gct gca gcc aaa gag tct tta tgc cag gca gcc ctg ggt ctc	1711
Arg Lys Ala Ala Ala Lys Glu Ser Leu Cys Gln Ala Ala Leu Gly Leu	
500 505 510 515	
atc ctc aag gag aaa gcc atg acc gac act ttc act ctt cag gca cat	1759
Ile Leu Lys Glu Lys Ala Met Thr Asp Thr Phe Thr Leu Gln Ala His	
516 521 526 531	
gat caa ttc tct cca ttt tcg tct agc agt gga aga aga ctg aat atc	1807
Asp Gln Phe Ser Pro Phe Ser Ser Ser Ser Gly Arg Arg Leu Asn Ile	
532 537 542 547	
tcg tat acc aga aac atg act ctt aaa gat ggt aaa aac aat gta gcc	1855
Ser Tyr Thr Arg Asn Met Thr Leu Lys Asp Gly Lys Asn Asn Val Ala	
548 553 558 563	



ata gct gta acg tat aac cat gat ggg tct tat agc atg cag aat taa 1903  
 Ile Ala Val Thr Tyr Asn His Asp Gly Ser Tyr Ser Met Gln Asn \*  
 564 569 574 579

agataaaaact ttccaagtcc ttggtaatct ttacagcgag ggagactgca cttacctgaa 1963  
 atgttctgtt aatggagttg ctagtaaagc gaagctgatt atcctggaaa acactattta 2023  
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 ctatatagat ggcattctaa taaagacttt catagttgga tgtaaacttc atgccctctt 180  
 tactcttgcc caagctgagg attctgtctt tggtatagtg aataaagaaa aaccagatat 240  
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 gctgtccttt gttttggatt acataaacca gtcacccaag tgcattgcct ttggaaacga 360  
 gggagtatat gttgctgcag tacgggaatt ttacttgtct gtttattttt tcaaaaagaa 420  
 aacaacatca aggtttactt tatcatcatc aagaaataag aagcatgcta aaaaccattt 480  
 tacgtgtgta gcatgtcacc ccacggaaga ccgcatcgca totggtcac atg gat 535  
 Met Asp  
 1

ggc caa att cgt ctt tgg agg aat ttt tat gat gat aag aaa tat acg 583  
 Gly Gln Ile Arg Leu Trp Arg Asn Phe Tyr Asp Asp Lys Lys Tyr Thr  
 3 8 13 18

tac aca tgt tta cat tgg cac cat gat atg gtt atg gat ttg gct ttt 631  
 Tyr Thr Cys Leu His Trp His His Asp Met Val Met Asp Leu Ala Phe  
 19 24 29 34

tca gtg aca ggc acc agt ctg ctg agt ggc ggt cgt gaa tct gta ctt 679  
 Ser Val Thr Gly Thr Ser Leu Leu Ser Gly Gly Arg Glu Ser Val Leu  
 35 40 45 50

gta gag tgg cgc gat gca aca gag aag aat aag gag ttt ctc ccg cgt	727
Val Glu Trp Arg Asp Ala Thr Glu Lys Asn Lys Glu Phe Leu Pro Arg	
51 56 61 66	
tta gga gct act att gaa cat atc tca gtc tgc cct gca gga gat tta	775
Leu Gly Ala Thr Ile Glu His Ile Ser Val Ser Pro Ala Gly Asp Leu	
67 72 77 82	
ttc tgc act tct cac tct gat aat aag ata ata att att cac cga aac	823
Phe Cys Thr Ser His Ser Asp Asn Lys Ile Ile Ile Ile His Arg Asn	
83 88 93 98	
ctt gaa gca tcc gca gta att caa ggc cta gtg aaa gat agg agt atc	871
Leu Glu Ala Ser Ala Val Ile Gln Gly Leu Val Lys Asp Arg Ser Ile	
99 104 109 114	
ttc act ggt ttg atg att gat cca aga act aaa gct ttg gtt ttg aat	919
Phe Thr Gly Leu Met Ile Asp Pro Arg Thr Lys Ala Leu Val Leu Asn	
115 120 125 130	
gga aaa cct ggc cac ctg cag ttt tat tct ctc cag agt gat aaa cag	967
Gly Lys Pro Gly His Leu Gln Phe Tyr Ser Leu Gln Ser Asp Lys Gln	
131 136 141 146	
tta tac aat tta gat att ata cag caa gaa tat att aat gat tat ggt	1015
Leu Tyr Asn Leu Asp Ile Ile Gln Gln Glu Tyr Ile Asn Asp Tyr Gly	
147 152 157 162	
ctg atc caa att gaa cta aca aag gct gca ttt ggc tgc ttt ggt aac	1063
Leu Ile Gln Ile Glu Leu Thr Lys Ala Ala Phe Gly Cys Phe Gly Asn	
163 168 173 178	
tgg ctt gca aca gtg gaa cag cgg caa gaa aag gaa act gag ctt gaa	1111
Trp Leu Ala Thr Val Glu Gln Arg Gln Glu Lys Glu Thr Glu Leu Glu	
179 184 189 194	
ttg caa atg aaa ctg tgg atg tat aat aag aaa aca caa ggg ttt att	1159
Leu Gln Met Lys Leu Trp Met Tyr Asn Lys Lys Thr Gln Gly Phe Ile	
195 200 205 210	
ctt aac act aaa att aac atg cca cac gaa gac tgc att aca gct ctc	1207
Leu Asn Thr Lys Ile Asn Met Pro His Glu Asp Cys Ile Thr Ala Leu	
211 216 221 226	
tgt ttc tgt aat gca gaa aaa tct gaa cag ccc acc ttg gtt aca gct	1255
Cys Phe Cys Asn Ala Glu Lys Ser Glu Gln Pro Thr Leu Val Thr Ala	
227 232 237 242	
agc aaa gat ggt tac ttc aaa gta tgg ata tta aca gat gac tct gac	1303
Ser Lys Asp Gly Tyr Phe Lys Val Trp Ile Leu Thr Asp Asp Ser Asp	
243 248 253 258	
ata tac aaa aaa gct gtt ggc tgg acc tgt gac ttg gtt ggt agt tat	1351
Ile Tyr Lys Lys Ala Val Gly Trp Thr Cys Asp Phe Val Gly Ser Tyr	
259 264 269 274	
cac aag tat caa gca act aac tgt tgt ttc tcc gaa gat ggt tct tta	1399

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cca gcc cat gtc ctg cca tct gct gct ttc ctg tgc tcc atg ttt gta				2119
Pro Ala His Val Leu Pro Ser Ala Ala Phe Leu Cys Ser Met Phe Val				
515	520	525	530	
aat tca ttg ctg ctg tct aaa gag act aag agt gct aag gaa att cct				2167
Asn Ser Leu Leu Leu Ser Lys Glu Thr Lys Ser Ala Lys Glu Ile Pro				
531	536	541	546	
gaa gat gta gat atg gaa gaa gaa aaa gaa agt gaa gat tca gat gaa				2215
Glu Asp Val Asp Met Glu Glu Glu Lys Glu Ser Glu Asp Ser Asp Glu				
547	552	557	562	
gaa aat gat ttt acc gaa aaa gtc cag gat aca agt aac aca ggt tta				2263
Glu Asn Asp Phe Thr Glu Lys Val Gln Asp Thr Ser Asn Thr Gly Leu				
563	568	573	578	
gga gaa gac att ata cat cag ttg tca aaa tct gaa gaa aaa gaa ctg				2311
Gly Glu Asp Ile Ile His Gln Leu Ser Lys Ser Glu Glu Lys Glu Leu				
579	584	589	594	
aga aaa ttt agg aaa ata gac tac agc tgg ata gct gcc ctt taa gcc				2359
Arg Lys Phe Arg Lys Ile Asp Tyr Ser Trp Ile Ala Ala Leu *				
595	600	605		
ttggagatgg ggaggatcct tggactttgt gtttttgatt gtatgttgat attctaaaaa				2419
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ttgagctcag gatcccgga ttacacgggg cgcgctgagc cccagatgtc cctaaccctt	180
ttccagcacc ctccagcctt gcagaagcag ccacc atg cca gtc tct aag tgc	233
Met Pro Val Ser Lys Cys	
1	
cca aaa aag tcg gag tcc ctg tgg aag ggg tgg gac cgg aag gcc cag	281
Pro Lys Lys Ser Glu Ser Leu Trp Lys Gly Trp Asp Arg Lys Ala Gln	

7	12	17	22	
agg aac ggc ctg cgg agc cag gta tac gct gtg aat ggc gac tac tat				329
Arg Asn Gly Leu Arg Ser Gln Val Tyr Ala Val Asn Gly Asp Tyr Tyr				
23	28	33	38	
gtg ggc gag tgg aag gac aac gtg aaa cac ggg aaa gga aca cag gtc				377
Val Gly Glu Trp Lys Asp Asn Val Lys His Gly Lys Gly Thr Gln Val				
39	44	49	54	
tgg aag aag aaa gga gcc atc tat gag ggg gac tgg aag ttt ggg aag				425
Trp Lys Lys Lys Gly Ala Ile Tyr Glu Gly Asp Trp Lys Phe Gly Lys				
55	60	65	70	
cga gac ggc tac ggc acc ctc agc ctt cct gac caa cag aca gga aag				473
Arg Asp Gly Tyr Gly Thr Leu Ser Leu Pro Asp Gln Gln Thr Gly Lys				
71	76	81	86	
tgc agg aga gtc tac tca ggc tgg tgg aaa ggt gat aag aaa tcg ggt				521
Cys Arg Arg Val Tyr Ser Gly Trp Trp Lys Gly Asp Lys Lys Ser Gly				
87	92	97	102	
tat ggg atc cag ttt ttc gga ccc aag gag tat tat gag ggt gac tgg				569
Tyr Gly Ile Gln Phe Phe Gly Pro Lys Glu Tyr Tyr Glu Gly Asp Trp				
103	108	113	118	
tgt ggc agc cag cgc agc ggg tgg ggc cgc atg tat tac agc aac ggc				617
Cys Gly Ser Gln Arg Ser Gly Trp Gly Arg Met Tyr Tyr Ser Asn Gly				
119	124	129	134	
gac atc tac gag gga cag tgg gag aac gac aag ccc aac ggg gag ggc				665
Asp Ile Tyr Glu Gly Gln Trp Glu Asn Asp Lys Pro Asn Gly Glu Gly				
135	140	145	150	
atg ctg cgc ctg agt caa aat cct aga ccc tga tgggtgtgc tggcggagcc				716
Met Leu Arg Leu Ser Gln Asn Pro Arg Pro *				
151	156	161		
ttggccatgt tcaggaagac agaggaagga gattgatgcc agagaacaca aacgcttcag				776
gagaaattca agcctgtgtc acccgatcgc tcagaccagt gcggctcttg ctggaggagt				836
cagcagcagc tccagggcatg accccggcac cctcataggg cccctcacta cccccagcac				896
tgggtcattt cttgccataa ggaaggctgg tgcttctctc ccaggctgtc ctcgggaccc				956
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aaaaaaaa				1024

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cctaccggca tcctcctagg gagggattat tattattatt tttctttaat ctggaagaga	180
agagaacaag ttgtgctttt ccccccttct tcttgctaaa tgccatggat ataactgaat	240
aagcggctca gggctttccc cgcgtggacg tccgaggcca ccatctgcct gcattcgccg	300
gagccgccgg aggggttagc tcgagtcctgt ctcgggcggg gaaggatgog tggccgagcc	360
ggggagcccc ggcgccccgc ggagccggcc tcgggtgccac ccagccgggg gtagatgctg	420
cctcgcccag gcgctgagtg accagacc atg gag acc ctg ctt ggt ggc ctg	472
Met Glu Thr Leu Leu Gly Gly Leu	
1 5	
cta gcg ttt ggc atg gcg ttt gcc gtg gtc gac gcc tgc ccc aag tac	520
Leu Ala Phe Gly Met Ala Phe Ala Val Val Asp Ala Cys Pro Lys Tyr	
9 14 19 24	
tgt gtc tgc cag aat ctg tct gag tca ctg ggg acc ctg tgc ccc tcc	568
Cys Val Cys Gln Asn Leu Ser Glu Ser Leu Gly Thr Leu Cys Pro Ser	
25 30 35 40	
aag ggg ctg ctc ttt gta ccc cct gat att gac cgg cgg aca gtg gag	616
Lys Gly Leu Leu Phe Val Pro Pro Asp Ile Asp Arg Arg Thr Val Glu	
41 46 51 56	
ctg cgc ctg ggc ggc aac ttc atc atc cac atc agc cgc cag gac ttt	664
Leu Arg Leu Gly Gly Asn Phe Ile Ile His Ile Ser Arg Gln Asp Phe	
57 62 67 72	
gcc aac atg acg ggg ctg gtg gac ctg acc ctg tcc agg aac acc atc	712
Ala Asn Met Thr Gly Leu Val Asp Leu Thr Leu Ser Arg Asn Thr Ile	
73 78 83 88	
agc cac atc cag ccc ttt tcc ttt ctg gac ctc gag agc ctc cgc tcc	760
Ser His Ile Gln Pro Phe Ser Phe Leu Asp Leu Glu Ser Leu Arg Ser	
89 94 99 104	
ctg cat ctt gac agc aat cgg ctg cca agc ctt ggg gag gac acc ctc	808
Leu His Leu Asp Ser Asn Arg Leu Pro Ser Leu Gly Glu Asp Thr Leu	
105 110 115 120	
cgg ggc ctg gtc aac ctg cag cac ctt atc gtg aac aac aac cag ctg	856
Arg Gly Leu Val Asn Leu Gln His Leu Ile Val Asn Asn Asn Gln Leu	
121 126 131 136	
ggc ggc atc gca gat gag gct ttt gag gac ttc ctg ctg aca ttg gag	904

Gly Gly Ile Ala Asp Glu Ala Phe Glu Asp Phe Leu Leu Thr Leu Glu	
137 142 147 152	
gat ctg gac ctc tcc tac aac aac ctc cat ggc ctg ccg tgg gac tcc	952
Asp Leu Asp Leu Ser Tyr Asn Asn Leu His Gly Leu Pro Trp Asp Ser	
153 158 163 168	
gtg cga cgc atg gtc aac ctc cac cag ctg agc ctg gac cac aac ctg	1000
Val Arg Arg Met Val Asn Leu His Gln Leu Ser Leu Asp His Asn Leu	
169 174 179 184	
ctg gat cac atc gcc gag ggc acc ttt gca gac ctg cag aaa ctg gcc	1048
Leu Asp His Ile Ala Glu Gly Thr Phe Ala Asp Leu Gln Lys Leu Ala	
185 190 195 200	
cgc ctg gat ctc acc tcc aat cgg ctg cag aag ctg ccc cct gat ccc	1096
Arg Leu Asp Leu Thr Ser Asn Arg Leu Gln Lys Leu Pro Pro Asp Pro	
201 206 211 216	
atc ttt gcc cgc tcc cag gct tcg gct ttg aca gcc aca ccc ttt gcc	1144
Ile Phe Ala Arg Ser Gln Ala Ser Ala Leu Thr Ala Thr Pro Phe Ala	
217 222 227 232	
cca ccc ttg tcc ttt agt ttt ggg ggt aac cca ctt cac tgc aat tgt	1192
Pro Pro Leu Ser Phe Ser Phe Gly Gly Asn Pro Leu His Cys Asn Cys	
233 238 243 248	
gag ctt ctc tgg ctg cgg agg ctc gag cgg gac gat gac ctg gaa acc	1240
Glu Leu Leu Trp Leu Arg Arg Leu Glu Arg Asp Asp Asp Leu Glu Thr	
249 254 259 264	
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Cys Gly Ser Pro Gly Gly Leu Lys Gly Arg Tyr Phe Trp His Val Arg	
265 270 275 280	
gag gag gag ttt gtg tgc gag cgg cct ctc atc acc cag cac aca cac	1336
Glu Glu Glu Phe Val Cys Glu Pro Pro Leu Ile Thr Gln His Thr His	
281 286 291 296	
aag ttg ctg gtt ctg gag ggc cag gcg gcc aca ctc aag tgc aaa gcc	1384
Lys Leu Leu Val Leu Glu Gly Gln Ala Ala Thr Leu Lys Cys Lys Ala	
297 302 307 312	
att ggg gac ccc agc ccc ctt atc cac tgg gta gcc ccc gat gac cgc	1432
Ile Gly Asp Pro Ser Pro Leu Ile His Trp Val Ala Pro Asp Asp Arg	
313 318 323 328	
ctg gta ggg aac tcc tca agg acc gct gtc tat gac aat ggc acc ccg	1480
Leu Val Gly Asn Ser Ser Arg Thr Ala Val Tyr Asp Asn Gly Thr Pro	
329 334 339 344	
gac atc ttc atc acc aca tct cag gac agt ggt gcc ttc acc tgc att	1528
Asp Ile Phe Ile Thr Thr Ser Gln Asp Ser Gly Ala Phe Thr Cys Ile	
345 350 355 360	
gct gcc aat gct gcc gga gag gcc acg gcc atg gtg gag gtc tcc atc	1576
Ala Ala Asn Ala Ala Gly Glu Ala Thr Ala Met Val Glu Val Ser Ile	

361	366	371	376	
gtc cag ctg cca cac ctc agc aac agc acc agc cgc act gca ccc ccc				1624
Val Gln Leu Pro His Leu Ser Asn Ser Thr Ser Arg Thr Ala Pro Pro				
377	382	387	392	
aag tcc cgc ctc tca gac atc act ggc tcc agc aag acc agc cgg gga				1672
Lys Ser Arg Leu Ser Asp Ile Thr Gly Ser Ser Lys Thr Ser Arg Gly				
393	398	403	408	
ggt gga ggc agt ggg ggc gga gag cct ccc aaa agc ccc ccg gaa cgg				1720
Gly Gly Gly Ser Gly Gly Gly Glu Pro Pro Lys Ser Pro Pro Glu Arg				
409	414	419	424	
gct gtg ctt gtg tct gaa gtg acc acc acc tcg gcc ctg gtc aag tgg				1768
Ala Val Leu Val Ser Glu Val Thr Thr Thr Ser Ala Leu Val Lys Trp				
425	430	435	440	
tct gtc agc aag tca gca ccc cgg gtg aag atg tac cag ctg cag tac				1816
Ser Val Ser Lys Ser Ala Pro Arg Val Lys Met Tyr Gln Leu Gln Tyr				
441	446	451	456	
aac tgc tct gac gat gag gta ctg att tac agg atg atc cca gcc tcc				1864
Asn Cys Ser Asp Asp Glu Val Leu Ile Tyr Arg Met Ile Pro Ala Ser				
457	462	467	472	
aac aag gcc ttc gtg gtc aac aac ctg gtg tca ggg act ggc tac gac				1912
Asn Lys Ala Phe Val Val Asn Asn Leu Val Ser Gly Thr Gly Tyr Asp				
473	478	483	488	
ttg tgt gtg ctg gcc atg tgg gat gac aca gcc acg aca ctc acg gcc				1960
Leu Cys Val Leu Ala Met Trp Asp Asp Thr Ala Thr Thr Leu Thr Ala				
489	494	499	504	
acc aac atc gtg ggc tgc gcc cag ttc ttc acc aag gct gac tac ccg				2008
Thr Asn Ile Val Gly Cys Ala Gln Phe Phe Thr Lys Ala Asp Tyr Pro				
505	510	515	520	
cag tgc cag tcc atg cac agc cag att ctg ggc ggc acc atg atc ctg				2056
Gln Cys Gln Ser Met His Ser Gln Ile Leu Gly Gly Thr Met Ile Leu				
521	526	531	536	
gtc atc ggg ggc atc atc gtg gcc acg ctg ctg gtc ttc atc gtc atc				2104
Val Ile Gly Gly Ile Ile Val Ala Thr Leu Leu Val Phe Ile Val Ile				
537	542	547	552	
ctc atg gtg cgc tac aag gtc tgc aac cac gag gcc ccc agc aag atg				2152
Leu Met Val Arg Tyr Lys Val Cys Asn His Glu Ala Pro Ser Lys Met				
553	558	563	568	
gca gcg gcc gtg agc aat gtg tac tcg cag acc aac ggc gcc cag cca				2200
Ala Ala Ala Val Ser Asn Val Tyr Ser Gln Thr Asn Gly Ala Gln Pro				
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ccg cct cca agc agc gca cca gcc ggg gcc ccg ccg cag ggc ccg ccg				2248
Pro Pro Pro Ser Ser Ala Pro Ala Gly Ala Pro Pro Gln Gly Pro Pro				
585	590	595	600	



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Lys Val Val Val Arg Asn Glu Leu Leu Asp Phe Thr Ala Ser Leu Ala	
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cgc gcc agt gac tcc tct tcc tcc agc tcc ctg ggc agt ggg gag gct	2344
Arg Ala Ser Asp Ser Ser Ser Ser Ser Ser Leu Gly Ser Gly Glu Ala	
617 622 627 632	
gcg ggg ctg gga cgg gcc ccc tgg agg atc cca ccc tcc gcc ccg cgc	2392
Ala Gly Leu Gly Arg Ala Pro Trp Arg Ile Pro Pro Ser Ala Pro Arg	
633 638 643 648	
ccc aag ccc agc ctt gac cgc ctg atg ggg gcc ttc gcc tcc ctg gac	2440
Pro Lys Pro Ser Leu Asp Arg Leu Met Gly Ala Phe Ala Ser Leu Asp	
649 654 659 664	
ctc aag agt cag aga aag gag gag ctg ctg gac tcc agg act cca gcc	2488
Leu Lys Ser Gln Arg Lys Glu Glu Leu Leu Asp Ser Arg Thr Pro Ala	
665 670 675 680	
ggg aga ggg gct ggg acg tcg gcc cgg ggc cac cac tcg gac cga gag	2536
Gly Arg Gly Ala Gly Thr Ser Ala Arg Gly His His Ser Asp Arg Glu	
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cca ctg ctg ggg ccc cct gcg gcc cgg gcc agg agc ctg ctc ccc ttg	2584
Pro Leu Leu Gly Pro Pro Ala Ala Arg Ala Arg Ser Leu Leu Pro Leu	
697 702 707 712	
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Pro Leu Glu Gly Lys Ala Lys Arg Ser His Ser Phe Asp Met Gly Asp	
713 718 723 728	
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Phe Ala Ala Ala Ala Ala Gly Gly Val Val Pro Gly Gly Tyr Ser Pro	
729 734 739 744	
cct cgg aag gtc tcg aac atc tgg acg aag cgc agc ctc tct gtc aac	2728
Pro Arg Lys Val Ser Asn Ile Trp Thr Lys Arg Ser Leu Ser Val Asn	
745 750 755 760	
ggc atg ctc ttg ccc ttt gag gag agt gac ctg gtg ggg gcc cgg ggg	2776
Gly Met Leu Leu Pro Phe Glu Glu Ser Asp Leu Val Gly Ala Arg Gly	
761 766 771 776	
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aggcttcaga aggagtcccc tggaaggcct ccacaacctc acgctagagt caaga atg	298
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Ser Arg Ala Gly Lys Lys Gln Leu Arg Gly Val Gln Asn Pro Cys Pro	
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Ser Ala Arg Ala Arg Pro Arg His Lys Ser Leu Asn Ile Lys Asp Lys	
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Ile Ser Glu Trp Glu Gly Lys Lys Glu Val Pro Thr Pro Ala Pro Ser	
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Val Val Ser Glu Ala Phe Val Arg Phe Phe Val Glu Ile Val Gly His				
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Tyr Ser Leu Phe Leu Thr Ser Gly Glu Arg Glu Glu Arg Thr Leu Gln				
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Val Gln Asp Ile Leu Gly Ser Val Thr Glu Lys Leu Gln Tyr Ser Glu	
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148 153 158 163	
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164 169 174 179	
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Glu Ala Leu Val Pro Leu Pro Glu Glu Ile Gln Val Ser Pro Gly Asp	
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Thr Glu Ile His Arg Val Glu Pro Glu Asp Val Ala Asn His Leu Thr	
212 217 222 227	
gcc ttc cac tgg gag ctg ttc cga tgt gtg cat gag ctg gag ttc gtg	1255
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292 297 302 307	
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Ser Phe Tyr Ala Val Val Met Gly Leu Asp Asn Ala Ala Val Ser Arg	
308 313 318 323	
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Leu Arg Leu Thr Trp Glu Lys Leu Pro Gly Lys Phe Lys Asn Leu Phe	



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Arg Lys Phe Glu Asn Leu Thr Asp Pro Cys Arg Asn His Lys Ser Tyr				
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cga gaa gtg atc tcc aaa atg aag ccc cct gtg att ccc ttc gtg cct				1639
Arg Glu Val Ile Ser Lys Met Lys Pro Pro Val Ile Pro Phe Val Pro				
356	361	366	371	
ctg atc ctc aaa gac ctg act ttc ctg cac gaa ggg agt aag acc ctt				1687
Leu Ile Leu Lys Asp Leu Thr Phe Leu His Glu Gly Ser Lys Thr Leu				
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Val Asp Gly Leu Val Asn Ile Glu Lys Leu His Ser Val Ala Glu Lys				
388	393	398	403	
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Val Arg Thr Ile Arg Lys Tyr Arg Ser Arg Pro Leu Cys Leu Asp Met				
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gccacgtgga g atg gtc aat tta ctc ttg gcc aaa ggg gca aat atc aat 410  
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1 5 10

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14 19 24 29

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Gly His Leu Asp Val Val Ala Leu Leu Ile Asn His Gly Ala Glu Val  
30 35 40 45

acc tgt aag gat aag aag ggt tat acc cct ctg cat gct gca gcc tcc 554  
Thr Cys Lys Asp Lys Lys Gly Tyr Thr Pro Leu His Ala Ala Ala Ser  
46 51 56 61

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Asn Gly Gln Ile Asn Val Val Lys His Leu Leu Asn Leu Gly Val Glu  
62 67 72 77

att gat gaa atc aat gtc tat gga aat aca gcg ctt cac atc gcc tgc 650  
Ile Asp Glu Ile Asn Val Tyr Gly Asn Thr Ala Leu His Ile Ala Cys  
78 83 88 93

tac aat gga cag gat gct gtg gtt aac gag ttg att gac tac ggt gct 698  
Tyr Asn Gly Gln Asp Ala Val Val Asn Glu Leu Ile Asp Tyr Gly Ala  
94 99 104 109

aac gtg aac cag cca aac aat aat ggg ttc acc cct ttg cat ttt gct 746  
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110 115 120 125

gct gcc tcc act cat ggt gct ttg tgt ctt gaa ttg tta gta aac aac 794  
Ala Ala Ser Thr His Gly Ala Leu Cys Leu Glu Leu Leu Val Asn Asn  
126 131 136 141

ggg gca gat gtt aac att cag agt aaa gat ggc aaa agt cca ctg cac 842  
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142 147 152 157

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His Val Ala Ala Arg Tyr Gly His Glu Leu Leu Ile Asn Thr Leu Ile  
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Leu His Leu Ala Ala Leu Asn Ala His Ser Asp Cys Cys Arg Lys Leu				
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Leu Ser Ser Gly Gln Lys Tyr Ser Ile Val Ser Leu Phe Ser Asn Glu				
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cac gtg ctg tct gca ggc ttt gaa ata gac acc cca gat aaa ttt gga				1178
His Val Leu Ser Ala Gly Phe Glu Ile Asp Thr Pro Asp Lys Phe Gly				
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Arg Thr Cys Leu His Ala Ala Ala Ala Gly Gly Asn Val Glu Cys Ile				
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Lys Leu Leu Gln Ser Ser Gly Ala Asp Phe His Lys Lys Asp Lys Cys				
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Gly Arg Thr Pro Leu His Tyr Ala Ala Ala Asn Cys His Phe His Cys				
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Ile Glu Thr Leu Val Thr Thr Gly Ala Asn Val Asn Glu Thr Asp Asp				
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Trp Gly Arg Thr Ala Leu His Tyr Ala Ala Ala Ser Asp Met Asp Arg				
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aga gcc agg gag ctg aag gaa aag gaa gcc aca cta tgt cta gag ttt				1514
Arg Ala Arg Glu Leu Lys Glu Lys Glu Ala Thr Leu Cys Leu Glu Phe				
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ctg ctt caa aat gat gca aat cca tct atc cgg gac aag gaa ggt tac				1562
Leu Leu Gln Asn Asp Ala Asn Pro Ser Ile Arg Asp Lys Glu Gly Tyr				
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Leu Leu Leu Glu Arg Thr Asn Ser Gly Phe Glu Glu Ser Asp Ser Gly				
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Ala Thr Lys Ser Pro Leu His Leu Ala Ala Tyr Asn Gly His His Gln				
430	435	440	445	

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Ala Leu Glu Val Leu Leu Gln Ser Leu Val Asp Leu Asp Ile Arg Asp	
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Glu Lys Gly Arg Thr Ala Leu Asp Leu Ala Phe Lys Gly His Thr	
462 467 472 477	
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Glu Cys Val Glu Ala Leu Ile Asn Gln Gly Ala Ser Ile Phe Val Lys	
478 483 488 493	
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Asp Asn Val Thr Lys Arg Thr Pro Leu His Ala Ser Val Ile Asn Gly	
494 499 504 509	
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His Thr Leu Cys Leu Arg Leu Leu Leu Glu Ile Ala Asp Asn Pro Glu	
510 515 520 525	
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Ala Val Asp Val Lys Asp Ala Lys Gly Gln Thr Pro Leu Met Leu Ala	
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Val Ala Tyr Gly His Ile Asp Ala Val Ser Leu Leu Leu Glu Lys Glu	
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Ala Asn Val Asp Thr Val Asp Ile Leu Gly Cys Thr Ala Leu His Arg	
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Gly Ile Met Thr Gly His Glu Glu Cys Val Gln Met Leu Leu Glu Gln	
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Glu Val Ser Ile Leu Cys Lys Asp Ser Arg Gly Arg Thr Pro Leu His	
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Tyr Ala Ala Ala Arg Gly His Ala Thr Trp Leu Ser Glu Leu Leu Gln	
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Met Ala Leu Ser Glu Glu Asp Cys Cys Phe Lys Asp Asn Gln Gly Tyr	
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Thr Pro Leu His Trp Ala Cys Tyr Asn Gly Asn Glu Asn Cys Ile Glu	
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Val Leu Leu Glu Gln Lys Cys Phe Arg Lys Phe Ile Gly Asn Pro Phe	
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act cca ctg cac tgt gca ata atc aat gat cat ggg aat tgt gca tca	2426
Thr Pro Leu His Cys Ala Ile Ile Asn Asp His Gly Asn Cys Ala Ser	
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Lys Gly Arg Thr Pro Leu His Ala Ala Ala Phe Ala Asp His Val Glu	
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Cys Leu Gln Leu Leu Leu Arg His Ser Ala Pro Val Asn Ala Val Asp	
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Asn Ser Gly Lys Thr Ala Leu Met Met Ala Ala Glu Asn Gly Gln Ala	
734 739 744 749	
ggc gct gtg gat att ttg gtg aac agt gcc cag gct gat ctg act gta	2666
Gly Ala Val Asp Ile Leu Val Asn Ser Ala Gln Ala Asp Leu Thr Val	
750 755 760 765	
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Lys Asp Lys Asp Leu Asn Thr Pro Leu His Leu Ala Cys Ser Lys Gly	
766 771 776 781	
cat gaa aaa tgt gcc ttg tta ata ctt gac aag ata caa gac gag agc	2762
His Glu Lys Cys Ala Leu Leu Ile Leu Asp Lys Ile Gln Asp Glu Ser	
782 787 792 797	
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Leu Ile Asn Glu Lys Asn Asn Ala Leu Gln Thr Pro Leu His Val Ala	
798 803 808 813	
gcg cgc aat ggc tta aag gtg gta gtt gag gag ttg ctg gcc aaa ggg	2858
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Met Gln Glu Gln Leu Asp  
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cac ctt ggt gaa gtt cag acg gaa tca gca gga att cag cgt gca cag 223  
His Leu Gly Glu Val Gln Thr Glu Ser Ala Gly Ile Gln Arg Ala Gln  
7 12 17 22

att cag aaa gaa ctt tgg cga att cag gat gtc atg gaa ggg ctg agt 271  
Ile Gln Lys Glu Leu Trp Arg Ile Gln Asp Val Met Glu Gly Leu Ser  
23 28 33 38

aaa cat aag cag caa aga ggt act aca gaa ata ggt atg ata gga tca 319  
Lys His Lys Gln Gln Arg Gly Thr Thr Glu Ile Gly Met Ile Gly Ser  
39 44 49 54

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ctc tac aag agt gaa cca gag tta aca aca gtg gca gaa gtt gat gaa 415  
Leu Tyr Lys Ser Glu Pro Glu Leu Thr Thr Val Ala Glu Val Asp Glu  
71 76 81 86

tct aat gga gaa gaa aaa tca gaa cct gtt tca gag ata gaa act tca 463  
Ser Asn Gly Glu Glu Lys Ser Glu Pro Val Ser Glu Ile Glu Thr Ser  
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103 108 113 118

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Lys Ser Pro Thr Pro Glu Ser Ser Thr Ile Ala Ser Tyr Val Thr Leu  
119 124 129 134

agg aaa act aag aag atg atg gat cta aga acg gaa aga cca aga agt 607  
Arg Lys Thr Lys Lys Met Met Asp Leu Arg Thr Glu Arg Pro Arg Ser  
135 140 145 150

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Ala Val Glu Gln Leu Cys Leu Ala Glu Ser Thr Arg Pro Arg Met Thr  
151 156 161 166

gtg gaa gag caa atg gaa aga ata aga aga cat caa caa gcg tgc ctg 703  
Val Glu Glu Gln Met Glu Arg Ile Arg Arg His Gln Gln Ala Cys Leu  
167 172 177 182

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Arg Glu Lys Lys Lys Gly Leu Asn Val Ile Gly Ala Ser Asp Gln Ser  
183 188 193 198

ccc tta caa agc cct tca aat tta agg gat aat cca ttt agg act act	799
Pro Leu Gln Ser Pro Ser Asn Leu Arg Asp Asn Pro Phe Arg Thr Thr	
199 204 209 214	
cag act cga agg agg gat gat aag gaa ctg gac act gcc att aga gaa	847
Gln Thr Arg Arg Arg Asp Asp Lys Glu Leu Asp Thr Ala Ile Arg Glu	
215 220 225 230	
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Asn Asp Val Lys Pro Asp His Glu Thr Pro Ala Thr Glu Ile Val Gln	
231 236 241 246	
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Leu Lys Glu Thr Glu Pro Gln Asn Val Asp Phe Ser Lys Glu Leu Lys	
247 252 257 262	
aaa act gaa aac att tca tat gaa atg ctt ttt gaa cct gag cca aat	991
Lys Thr Glu Asn Ile Ser Tyr Glu Met Leu Phe Glu Pro Glu Pro Asn	
263 268 273 278	
gga gta aat tct gtg gaa atg atg gat aaa gaa aga aac aaa gac aaa	1039
Gly Val Asn Ser Val Glu Met Met Asp Lys Glu Arg Asn Lys Asp Lys	
279 284 289 294	
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Met Pro Glu Asp Val Thr Phe Ser Pro Gln Asp Glu Thr Gln Thr Ala	
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Asn His Lys Pro Glu Glu His Pro Glu Glu Asn Thr Lys Asn Ser Val	
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Asp Glu Gln Glu Glu Thr Val Ile Ser Tyr Glu Ser Thr Pro Glu Val	
327 332 337 342	
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Ser Arg Gly Asn Gln Thr Met Ala Val Lys Ser Leu Ser Pro Ser Pro	
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Gly Ser His Phe Met Cys Val *	
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Gly Glu Leu Phe Leu His Leu Arg Ser Val Ala Arg Ala Pro Gln Thr
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tta tct atg cac cga ctc cag aga aag ctg aag gag gca gcc aga aaa      268
Leu Ser Met His Arg Leu Gln Arg Lys Leu Lys Glu Ala Ala Arg Lys
  23              28              33              38

atc atc agc ctc cgc ctg gag aaa gag cag ctc atc gag atg ggg aac      316
Ile Ile Ser Leu Arg Leu Glu Lys Glu Gln Leu Ile Glu Met Gly Asn
  39              44              49              54

agg ctc cgt gca gag ctg ggc cga ccc gaa agg tgg ctg ttg cac cac      364
Arg Leu Arg Ala Glu Leu Gly Arg Pro Glu Arg Trp Leu Leu His His
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gcc ctc cct cct gcc cct gag gcc cgg aag cca ggc gag gag ccc agg      412
Ala Leu Pro Pro Ala Pro Glu Ala Arg Lys Pro Gly Glu Glu Pro Arg
  71              76              81              86

agg cct ttg gat cgc agc cca cct ttg gga cag gtg cag ccc cat ttt      460
Arg Pro Leu Asp Arg Ser Pro Pro Leu Gly Gln Val Gln Pro His Phe
  87              92              97             102

aca tct cag gac gcc aag agt gcc gag gat gag gct cct tcc aga cac      508
Thr Ser Gln Asp Ala Lys Ser Ala Glu Asp Glu Ala Pro Ser Arg His
 103              108              113              118

ttg gga aag cac cag ccc cgc tca gca cag gtg ggc agc aga ctt gac      556
Leu Gly Lys His Gln Pro Arg Ser Ala Gln Val Gly Ser Arg Leu Asp
 119              124              129              134

gcc ctg caa ggc ccg aag aca caa cac agc atc cac acg gtg acc tgt      604
Ala Leu Gln Gly Pro Lys Thr Gln His Ser Ile His Thr Val Thr Cys
 135              140              145              150

aaa tca cct cgg cag aaa gaa gac agg tcc cca aag cca ccc cag gct      652

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Phe	Ala	Ser	Gly	Thr	Leu	Gln	Asp	Met	Trp	Arg	Leu	Leu	Asp	Leu	Gly	
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Ser	Ser	Pro	Ser	Gly	Val	Thr	Ser	Gln	Gly	Asp	Ser	Thr	Pro	Glu	Leu	
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Pro	Ala	Pro	Pro	Ala	Ala	Asp	Arg	Arg	Pro	Val	Lys	Met	Gln	Ala	Gly	
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att	gcc	acc	cca	ggg	atg	aag	aca	gca	gcc	cag	gca	aag	gcc	aag	acc	892
Ile	Ala	Thr	Pro	Gly	Met	Lys	Thr	Ala	Ala	Gln	Ala	Lys	Ala	Lys	Thr	
231					236					241					246	
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Thr	Gly	Ala	Ser	Arg	Ser	His	Pro	Ala	Lys	Ala	Lys	Gly	Cys	Gln	Arg	
247					252					257					262	
ccc	ccc	aag	atc	cgt	aac	tac	aac	att	atg	gac	tga	cttc	ctccccccac			990
Pro	Pro	Lys	Ile	Arg	Asn	Tyr	Asn	Ile	Met	Asp	*					
263					268					273						
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1					5					10						
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Ile	Leu	Ala	Ser	Asn	Thr	Met	Asp	Ser	Gln	Met	Leu	Ala	Ser	Asn	Thr		
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Met	Asp	Ser	Gln	Met	Leu	Ala	Ser	Asn	Thr	Met	Asp	Ser	Gln	Met	Leu		
33					38					43					48		
gcg	tct	agc	acc	atg	gac	tcc	cag	atg	tta	gca	act	agc	tcc	atg	gac	192	
Ala	Ser	Ser	Thr	Met	Asp	Ser	Gln	Met	Leu	Ala	Thr	Ser	Ser	Met	Asp		
49					54					59					64		
tcc	caa	atg	cta	gcg	tcc	aac	acc	atg	gac	tcc	cag	atg	cta	gca	tcc	240	
Ser	Gln	Met	Leu	Ala	Ser	Asn	Thr	Met	Asp	Ser	Gln	Met	Leu	Ala	Ser		
65					70					75					80		
aac	acc	atg	gac	tcc	cag	atg	tta	gcg	tct	agc	acc	atg	gac	tcc	cag	288	
Asn	Thr	Met	Asp	Ser	Gln	Met	Leu	Ala	Ser	Ser	Thr	Met	Asp	Ser	Gln		
81					86					91					96		
atg	tta	gca	act	agc	tcc	atg	gac	tcc	cag	atg	tta	gca	act	agc	tcc	336	
Met	Leu	Ala	Thr	Ser	Ser	Met	Asp	Ser	Gln	Met	Leu	Ala	Thr	Ser	Ser		
97					102					107					112		
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Met	Asp	Ser	Gln	Met	Leu	Ala	Thr	Ser	Thr	Met	Asp	Ser	Gln	Met	Leu		
113					118					123					128		
gca	acc	agt	tcc	atg	gac	tcc	cag	atg	tta	gca	acc	agc	tcc	atg	gac	432	
Ala	Thr	Ser	Ser	Met	Asp	Ser	Gln	Met	Leu	Ala	Thr	Ser	Ser	Met	Asp		
129					134					139					144		
tcc	cag	atg	tta	gca	acc	agc	tcc	atg	gac	tcc	cag	atg	tta	gca	acc	480	
Ser	Gln	Met	Leu	Ala	Thr	Ser	Ser	Met	Asp	Ser	Gln	Met	Leu	Ala	Thr		
145					150					155					160		
agc	tcc	atg	gac	tcc	cag	atg	tta	gca	acc	agc	acc	atg	gat	tct	cag	528	
Ser	Ser	Met	Asp	Ser	Gln	Met	Leu	Ala	Thr	Ser	Thr	Met	Asp	Ser	Gln		
161					166					171					176		
atg	tta	gca	acc	agc	acc	atg	gac	tcc	cag	atg	tta	gca	act	agc	tca	576	
Met	Leu	Ala	Thr	Ser	Thr	Met	Asp	Ser	Gln	Met	Leu	Ala	Thr	Ser	Ser		
177					182					187					192		
atg	gat	tcc	cag	atg	tta	gca	tct	ggc	act	atg	gac	tct	caa	atg	tta	624	
Met	Asp	Ser	Gln	Met	Leu	Ala	Ser	Gly	Thr	Met	Asp	Ser	Gln	Met	Leu		
193					198					203					208		
gct	tct	ggc	acc	atg	gat	gct	cag	atg	tta	gcg	tct	ggg	acc	atg	gat	672	
Ala	Ser	Gly	Thr	Met	Asp	Ala	Gln	Met	Leu	Ala	Ser	Gly	Thr	Met	Asp		
209					214					219					224		
gcc	cag	atg	tta	gcg	tct	agt	acc	caa	gat	tct	gct	atg	ttg	ggg	tca	720	
Ala	Gln	Met	Leu	Ala	Ser	Ser	Thr	Gln	Asp	Ser	Ala	Met	Leu	Gly	Ser		
225					230					235					240		
aaa	tct	cct	gat	ccc	tat	agg	tta	gct	cag	gat	cct	tac	agg	tta	gct	768	
Lys	Ser	Pro	Asp	Pro	Tyr	Arg	Leu	Ala	Gln	Asp	Pro	Tyr	Arg	Leu	Ala		

241	246	251	256	
cag gat ccc tat agg ttg ggc cat gac ccc tat aga tta ggt cat gat				816
Gln Asp Pro Tyr Arg Leu Gly His Asp Pro Tyr Arg Leu Gly His Asp				
257	262	267	272	
gct tac agg tta gga caa gac cct tat aga tta ggc cat gat ccc tac				864
Ala Tyr Arg Leu Gly Gln Asp Pro Tyr Arg Leu Gly His Asp Pro Tyr				
273	278	283	288	
aga cta act cct gat ccc tat agg atg tca cct aga ccc tac agg ata				912
Arg Leu Thr Pro Asp Pro Tyr Arg Met Ser Pro Arg Pro Tyr Arg Ile				
289	294	299	304	
gca ccc agg tcc tat aga ata gca ccc agg cca tat agg tta gca cct				960
Ala Pro Arg Ser Tyr Arg Ile Ala Pro Arg Pro Tyr Arg Leu Ala Pro				
305	310	315	320	
aga ccc ctg atg tta gca tct aga cgt tct atg atg atg tcc tat gct				1008
Arg Pro Leu Met Leu Ala Ser Arg Arg Ser Met Met Met Ser Tyr Ala				
321	326	331	336	
gca gaa cgt tcc atg atg tca tct tac gaa cgc tct atg atg tct tat				1056
Ala Glu Arg Ser Met Met Ser Ser Tyr Glu Arg Ser Met Met Ser Tyr				
337	342	347	352	
gag cgg tct atg atg tcc cct atg gct gaa cgc tct atg atg tca gcc				1104
Glu Arg Ser Met Met Ser Pro Met Ala Glu Arg Ser Met Met Ser Ala				
353	358	363	368	
tac gag cgc tct atg atg tca gcc tac gag cgc tct atg atg tcc cct				1152
Tyr Glu Arg Ser Met Met Ser Ala Tyr Glu Arg Ser Met Met Ser Pro				
369	374	379	384	
atg gct gag cgc tct atg atg tca gct tat gaa cgc tcc atg atg tca				1200
Met Ala Glu Arg Ser Met Met Ser Ala Tyr Glu Arg Ser Met Met Ser				
385	390	395	400	
gct tat gaa cgc tcc atg atg tcc cca atg gct gat cga tct atg atg				1248
Ala Tyr Glu Arg Ser Met Met Ser Pro Met Ala Asp Arg Ser Met Met				
401	406	411	416	
tcc atg ggt gct gac cgg tct atg atg tcc tca tac tct gct gct gac				1296
Ser Met Gly Ala Asp Arg Ser Met Met Ser Ser Tyr Ser Ala Ala Asp				
417	422	427	432	
cgg tct atg atg tca tcc tac tct gca gct gac cga tct atg atg tca				1344
Arg Ser Met Met Ser Ser Tyr Ser Ala Ala Asp Arg Ser Met Met Ser				
433	438	443	448	
tct tat act gct gat cgt tca atg atg tct atg gct gct gat tct tac				1392
Ser Tyr Thr Ala Asp Arg Ser Met Met Ser Met Ala Ala Asp Ser Tyr				
449	454	459	464	
acc gat tct tac act gac aca tat aca gag gca tat atg gtg cca cct				1440
Thr Asp Ser Tyr Thr Asp Thr Tyr Thr Glu Ala Tyr Met Val Pro Pro				
465	470	475	480	

ttg cct cct gaa gag ccc cca aca atg cca ccg ttg cca cct gag gag	1488
Leu Pro Pro Glu Glu Pro Pro Thr Met Pro Pro Leu Pro Pro Glu Glu	
481 486 491 496	
cca cca atg aca cca cca ttg cct cct gag gaa cca cca gag ggt cca	1536
Pro Pro Met Thr Pro Pro Leu Pro Pro Glu Glu Pro Pro Glu Gly Pro	
497 502 507 512	
gca ttg ccc act gag cag tca gca tta aca gct gaa aat act tgg cct	1584
Ala Leu Pro Thr Glu Gln Ser Ala Leu Thr Ala Glu Asn Thr Trp Pro	
513 518 523 528	
aca gag gtg cca tca tta cca tct gaa gag tct gta tcg cag cct gag	1632
Thr Glu Val Pro Ser Leu Pro Ser Glu Glu Ser Val Ser Gln Pro Glu	
529 534 539 544	
cct cct gtg agt caa agt gag att tcg gag cct tca gca gtg cct act	1680
Pro Pro Val Ser Gln Ser Glu Ile Ser Glu Pro Ser Ala Val Pro Thr	
545 550 555 560	
gat tat tca gtg tca gca tca gat ccc tca gtt tta gta tca gag gct	1728
Asp Tyr Ser Val Ser Ala Ser Asp Pro Ser Val Leu Val Ser Glu Ala	
561 566 571 576	
gct gtg act gtt cca gaa cca cca cca gag cca gaa tct tca att acg	1776
Ala Val Thr Val Pro Glu Pro Pro Pro Glu Pro Glu Ser Ser Ile Thr	
577 582 587 592	
tta aca cct gta gag tct gca gta gta gca gaa gaa cat gaa gtt gtt	1824
Leu Thr Pro Val Glu Ser Ala Val Val Ala Glu Glu His Glu Val Val	
593 598 603 608	
cca gag aga cca gtg act tgt atg gta tct gaa act ccc gcc atg tca	1872
Pro Glu Arg Pro Val Thr Cys Met Val Ser Glu Thr Pro Ala Met Ser	
609 614 619 624	
gct gaa cca act gtg tta gca tca gag cct cct gtt atg tca gag aca	1920
Ala Glu Pro Thr Val Leu Ala Ser Glu Pro Pro Val Met Ser Glu Thr	
625 630 635 640	
gca gaa aca ttt gat tcc atg aga gcc tca gga cat gtt gcc tca gaa	1968
Ala Glu Thr Phe Asp Ser Met Arg Ala Ser Gly His Val Ala Ser Glu	
641 646 651 656	
gta tct aca tcc ttg ttg gtt cca gca gta act act cca gtg ctg gca	2016
Val Ser Thr Ser Leu Leu Val Pro Ala Val Thr Thr Pro Val Leu Ala	
657 662 667 672	
gag agc att ctg gag ccg cca gcc atg gct gcc cca gag tct tca gct	2064
Glu Ser Ile Leu Glu Pro Pro Ala Met Ala Ala Pro Glu Ser Ser Ala	
673 678 683 688	
atg gct gtc ctg gag tct tcg gct gtg acc gtc ctg gag tct tcg act	2112
Met Ala Val Leu Glu Ser Ser Ala Val Thr Val Leu Glu Ser Ser Thr	
689 694 699 704	

gtg act gtc ctg gag tct tcg act gta act gtc ctg gag cct tcg gtt	2160
Val Thr Val Leu Glu Ser Ser Thr Val Thr Val Leu Glu Pro Ser Val	
705 710 715 720	
gtg act gtc ccg gag cct cct gtt gtg gct gag cca gac tct gtt acc	2208
Val Thr Val Pro Glu Pro Pro Val Val Ala Glu Pro Asp Ser Val Thr	
721 726 731 736	
att cct gtg cca gtt gtt tct gcg ctg gag cct tct gtg cct gtt ctg	2256
Ile Pro Val Pro Val Val Ser Ala Leu Glu Pro Ser Val Pro Val Leu	
737 742 747 752	
gaa cca gcg gtg tca gtc ctt caa cct tct atg att gtt tca gaa cca	2304
Glu Pro Ala Val Ser Val Leu Gln Pro Ser Met Ile Val Ser Glu Pro	
753 758 763 768	
tct gtt tct gtc cag gaa tcg act gtg aca gtt tca gag cct gct gtc	2352
Ser Val Ser Val Gln Glu Ser Thr Val Thr Val Ser Glu Pro Ala Val	
769 774 779 784	
aca gtc tca gag cag act caa gta ata cca act gag gtg gct ata gag	2400
Thr Val Ser Glu Gln Thr Gln Val Ile Pro Thr Glu Val Ala Ile Glu	
785 790 795 800	
tcc aca cca atg ata ctg gaa tct agt atc atg tca tca cat gtt atg	2448
Ser Thr Pro Met Ile Leu Glu Ser Ser Ile Met Ser Ser His Val Met	
801 806 811 816	
aaa gga att aat cta tcc tct ggt gat caa att ctt gct cca gag att	2496
Lys Gly Ile Asn Leu Ser Ser Gly Asp Gln Ile Leu Ala Pro Glu Ile	
817 822 827 832	
ggc atg cag gag att gca ttg cat tca ggt gaa gaa cca cat gct gag	2544
Gly Met Gln Glu Ile Ala Leu His Ser Gly Glu Glu Pro His Ala Glu	
833 838 843 848	
gaa cac ctg aaa ggt gac ttt tac gaa agt gaa cat ggt ata aat ata	2592
Glu His Leu Lys Gly Asp Phe Tyr Glu Ser Glu His Gly Ile Asn Ile	
849 854 859 864	
gac ctt aat ata aat agt cat tta att gct aaa gag atg gaa cat aat	2640
Asp Leu Asn Ile Asn Ser His Leu Ile Ala Lys Glu Met Glu His Asn	
865 870 875 880	
aca gtg tgt gct gct ggt act agt cct gtt ggg gaa att ggt gaa gag	2688
Thr Val Cys Ala Ala Gly Thr Ser Pro Val Gly Glu Ile Gly Glu Glu	
881 886 891 896	
aaa att ttg ccc acc agt gag act aaa cag cgc aca gta ttg gat acc	2736
Lys Ile Leu Pro Thr Ser Glu Thr Lys Gln Arg Thr Val Leu Asp Thr	
897 902 907 912	
tac cct ggt gtt agt gaa gct gat gca gga gaa act cta tct tct act	2784
Tyr Pro Gly Val Ser Glu Ala Asp Ala Gly Glu Thr Leu Ser Ser Thr	
913 918 923 928	
ggc cct ttt gct ctg gaa cct gat gca aca gga act agt aag ggt att	2832

Gly	Pro	Phe	Ala	Leu	Glu	Pro	Asp	Ala	Thr	Gly	Thr	Ser	Lys	Gly	Ile	
929					934					939					944	
gaa	ttt	acc	aca	gca	tct	act	ctc	agt	tta	gtt	aat	aaa	tat	gat	gtt	2880
Glu	Phe	Thr	Thr	Ala	Ser	Thr	Leu	Ser	Leu	Val	Asn	Lys	Tyr	Asp	Val	
945					950					955					960	
gat	tta	tct	tta	act	act	caa	gat	act	gaa	cat	gac	atg	gta	ata	att	2928
Asp	Leu	Ser	Leu	Thr	Thr	Gln	Asp	Thr	Glu	His	Asp	Met	Val	Ile	Ile	
961					966					971					976	
tcc	acc	agt	cct	agt	ggg	ggg	agt	gaa	gct	gac	att	gaa	ggg	cct	ttg	2976
Ser	Thr	Ser	Pro	Ser	Gly	Gly	Ser	Glu	Ala	Asp	Ile	Glu	Gly	Pro	Leu	
977					982					987					992	
cct	gct	aaa	gat	att	cat	ctt	gat	tta	cca	tct	aat	aat	aac	ctt	gtt	3024
Pro	Ala	Lys	Asp	Ile	His	Leu	Asp	Leu	Pro	Ser	Asn	Asn	Asn	Leu	Val	
993					998					1003					1008	
agt	aag	gat	aca	gaa	gaa	cca	tta	cct	gta	aaa	gag	agt	gac	cag	aca	3072
Ser	Lys	Asp	Thr	Glu	Glu	Pro	Leu	Pro	Val	Lys	Glu	Ser	Asp	Gln	Thr	
1009					1014					1019					1024	
ata	gca	gcc	ttg	ctc	agc	cct	aaa	gaa	agt	agt	gga	gga	gaa	aaa	gaa	3120
Ile	Ala	Ala	Leu	Leu	Ser	Pro	Lys	Glu	Ser	Ser	Gly	Gly	Glu	Lys	Glu	
1025					1030					1035					1040	
gta	cct	ccc	cct	cct	aaa	gag	aca	ctg	cct	gat	tca	gga	ttt	tct	gcc	3168
Val	Pro	Pro	Pro	Pro	Lys	Glu	Thr	Leu	Pro	Asp	Ser	Gly	Phe	Ser	Ala	
1041					1046					1051					1056	
aat	att	gag	gat	att	aat	gaa	gca	gat	tta	gtg	aga	ccg	tta	ctt	cct	3216
Asn	Ile	Glu	Asp	Ile	Asn	Glu	Ala	Asp	Leu	Val	Arg	Pro	Leu	Leu	Pro	
1057					1062					1067					1072	
aag	gac	atg	gaa	cgt	ctt	aca	agc	ctt	aga	gct	ggc	att	gaa	gga	cct	3264
Lys	Asp	Met	Glu	Arg	Leu	Thr	Ser	Leu	Arg	Ala	Gly	Ile	Glu	Gly	Pro	
1073					1078					1083					1088	
tta	ctt	gca	agt	gat	gtt	gga	cgt	gac	aga	tct	gct	gcc	agc	ccg	gtt	3312
Leu	Leu	Ala	Ser	Asp	Val	Gly	Arg	Asp	Arg	Ser	Ala	Ala	Ser	Pro	Val	
1089					1094					1099					1104	
gta	agt	agt	atg	cca	gaa	aga	gct	tca	gag	tct	tct	tca	gag	gaa	aaa	3360
Val	Ser	Ser	Met	Pro	Glu	Arg	Ala	Ser	Glu	Ser	Ser	Ser	Glu	Glu	Lys	
1105					1110					1115					1120	
gat	gat	tat	gaa	att	ttt	gta	aaa	gtt	aag	gac	act	cac	gaa	aaa	agc	3408
Asp	Asp	Tyr	Glu	Ile	Phe	Val	Lys	Val	Lys	Asp	Thr	His	Glu	Lys	Ser	
1121					1126					1131					1136	
aag	aaa	aat	aag	aac	cgt	gat	aag	ggg	gag	aaa	gag	aag	aaa	aga	gat	3456
Lys	Lys	Asn	Lys	Asn	Arg	Asp	Lys	Gly	Glu	Lys	Glu	Lys	Lys	Arg	Asp	
1137					1142					1147					1152	
cct	cat	tta	aga	tct	cga	agt	aag	cgt	tcc	aaa	tct	tct	gaa	cac	aaa	3504
Pro	His	Leu	Arg	Ser	Arg	Ser	Lys	Arg	Ser	Lys	Ser	Ser	Glu	His	Lys	

1153	1158	1163	1168	
tca cgc aag cgt acc agt gaa tct cgt tct agg gca aga aag aga tca				3552
Ser Arg Lys Arg Thr Ser Glu Ser Arg Ser Arg Ala Arg Lys Arg Ser				
1169	1174	1179	1184	
tct aag tcc aag tct cat cgc tct cag aca cgt tca cgg tca cgt tca				3600
Ser Lys Ser Lys Ser His Arg Ser Gln Thr Arg Ser Arg Ser Arg Ser				
1185	1190	1195	1200	
aga cgc agg agg aga agc agc aga tca aga tca aag tct aga gga aga				3648
Arg Arg Arg Arg Arg Ser Ser Arg Ser Arg Ser Lys Ser Arg Gly Arg				
1201	1206	1211	1216	
aga tct gta tca aaa gag aag cgc aaa aga tct cca aag cac aga tcc				3696
Arg Ser Val Ser Lys Glu Lys Arg Lys Arg Ser Pro Lys His Arg Ser				
1217	1222	1227	1232	
aag tct agg gaa aga aaa aga aaa aga tca agc tcc agg gat aac cga				3744
Lys Ser Arg Glu Arg Lys Arg Lys Arg Ser Ser Ser Arg Asp Asn Arg				
1233	1238	1243	1248	
aag aca gtt aga gct cga agt cga acc cca agt cgt cgg agt cgg agt				3792
Lys Thr Val Arg Ala Arg Ser Arg Thr Pro Ser Arg Arg Ser Arg Ser				
1249	1254	1259	1264	
cat act cca agt cgt cga cga agg tct aga tct gtg ggt aga aga agg				3840
His Thr Pro Ser Arg Arg Arg Arg Ser Arg Ser Val Gly Arg Arg Arg				
1265	1270	1275	1280	
agc ttt agc att tcc cca agc cgc cgc agc cgc acc ccc agc cgc cgc				3888
Ser Phe Ser Ile Ser Pro Ser Arg Arg Ser Arg Thr Pro Ser Arg Arg				
1281	1286	1291	1296	
agc cgc acc ccc agc cgc cgc agc cgc acc ccc agc cgc cgc agc cgc				3936
Ser Arg Thr Pro Ser Arg Arg Ser Arg Thr Pro Ser Arg Arg Ser Arg				
1297	1302	1307	1312	
acc ccc agc cgc cgg agc cgc acc cct agc cgt cgg agc cgc acc cca				3984
Thr Pro Ser Arg Arg Ser Arg Thr Pro Ser Arg Arg Ser Arg Thr Pro				
1313	1318	1323	1328	
agc cgc cgg aga aga tca agg tct gtg gta aga aga cga agc ttc agt				4032
Ser Arg Arg Arg Arg Ser Arg Ser Val Val Arg Arg Arg Ser Phe Ser				
1329	1334	1339	1344	
atc tca cca gtc aga tta agg cga tca aga aca ccc tta aga aga agg				4080
Ile Ser Pro Val Arg Leu Arg Arg Ser Arg Thr Pro Leu Arg Arg Arg				
1345	1350	1355	1360	
ttt agc aga tct ccc atc cgt cgt aaa aga tcc agg tct tct gaa cga				4128
Phe Ser Arg Ser Pro Ile Arg Arg Lys Arg Ser Arg Ser Ser Glu Arg				
1361	1366	1371	1376	
ggc aga tca ccc aaa cgt ctg aca gat ttg gat aag gct caa tta ctt				4176
Gly Arg Ser Pro Lys Arg Leu Thr Asp Leu Asp Lys Ala Gln Leu Leu				
1377	1382	1387	1392	

gaa ata gcc aaa gct aat gca gct gcc atg tgt gct aag gct ggt gtc	4224
Glu Ile Ala Lys Ala Asn Ala Ala Ala Met Cys Ala Lys Ala Gly Val	
1393 1398 1403 1408	
cct tta cca cca aac cta aag cct gca cct cca cct act ata gtt gag	4272
Pro Leu Pro Pro Asn Leu Lys Pro Ala Pro Pro Pro Thr Ile Val Glu	
1409 1414 1419 1424	
aaa gtt gct aaa aag tca gga gga gct act ata gaa gaa cta act gag	4320
Lys Val Ala Lys Lys Ser Gly Gly Ala Thr Ile Glu Glu Leu Thr Glu	
1425 1430 1435 1440	
aaa tgt aaa cag atc gca cag agt aaa gaa gat gat gat gta ata gtg	4368
Lys Cys Lys Gln Ile Ala Gln Ser Lys Glu Asp Asp Asp Val Ile Val	
1441 1446 1451 1456	
aat aaa cct cat gtt tcg gat gaa gag gaa gaa gaa cct cct ttt tat	4416
Asn Lys Pro His Val Ser Asp Glu Glu Glu Glu Glu Pro Pro Phe Tyr	
1457 1462 1467 1472	
cat cat ccc ttt aaa ctc agt gaa ttt aaa cct att ttt ttc aat ctg	4464
His His Pro Phe Lys Leu Ser Glu Phe Lys Pro Ile Phe Phe Asn Leu	
1473 1478 1483 1488	
aat att gct gca gca aaa cca act cca cca aaa agc cag gta aca tta	4512
Asn Ile Ala Ala Ala Lys Pro Thr Pro Pro Lys Ser Gln Val Thr Leu	
1489 1494 1499 1504	
aca aaa gaa ttc cct gta tca tct gga tct caa cat cgg aaa aaa gaa	4560
Thr Lys Glu Phe Pro Val Ser Ser Gly Ser Gln His Arg Lys Lys Glu	
1505 1510 1515 1520	
gcg gat agt gtt tat gga gaa tgg gtt cct gtg gag aaa aat ggt gaa	4608
Ala Asp Ser Val Tyr Gly Glu Trp Val Pro Val Glu Lys Asn Gly Glu	
1521 1526 1531 1536	
gaa aac aaa gat gat gat aat gtt ttc agc agc aat ttg ccc tca gag	4656
Glu Asn Lys Asp Asp Asp Asn Val Phe Ser Ser Asn Leu Pro Ser Glu	
1537 1542 1547 1552	
cct gtg gac atc tct aca gca atg agt gaa cgg gca ctt gct cag aaa	4704
Pro Val Asp Ile Ser Thr Ala Met Ser Glu Arg Ala Leu Ala Gln Lys	
1553 1558 1563 1568	
aga ctc agt gag aat gca ttt gat ctt gaa gcc atg agc atg tta aat	4752
Arg Leu Ser Glu Asn Ala Phe Asp Leu Glu Ala Met Ser Met Leu Asn	
1569 1574 1579 1584	
aga gct cag gaa agg att gat gcc tgg gct cag ctg aac tct att cct	4800
Arg Ala Gln Glu Arg Ile Asp Ala Trp Ala Gln Leu Asn Ser Ile Pro	
1585 1590 1595 1600	
ggc cag ttc aca gga agt aca gga gta cag gtt ttg aca caa gaa cag	4848
Gly Gln Phe Thr Gly Ser Thr Gly Val Gln Val Leu Thr Gln Glu Gln	
1601 1606 1611 1616	



ttg gcc aat act ggt gcc caa gcc tgg att aaa aag gat cag ttc tta	4896
Leu Ala Asn Thr Gly Ala Gln Ala Trp Ile Lys Lys Asp Gln Phe Leu	
1617 1622 1627 1632	
aga gca gcc ccg gta act gga gga atg gga gcc gtt ttg atg aga aaa	4944
Arg Ala Ala Pro Val Thr Gly Gly Met Gly Ala Val Leu Met Arg Lys	
1633 1638 1643 1648	
atg ggc tgg aga gaa gga gaa gga tta gga aaa aac aaa gaa ggc aat	4992
Met Gly Trp Arg Glu Gly Glu Gly Leu Gly Lys Asn Lys Glu Gly Asn	
1649 1654 1659 1664	
aag gaa ccc atc cta gtt gat ttt aag aca gac cga aaa ggt ctt gtt	5040
Lys Glu Pro Ile Leu Val Asp Phe Lys Thr Asp Arg Lys Gly Leu Val	
1665 1670 1675 1680	
gca gta gga gaa aga gca caa aag agg tct ggg aac ttc tct gct gca	5088
Ala Val Gly Glu Arg Ala Gln Lys Arg Ser Gly Asn Phe Ser Ala Ala	
1681 1686 1691 1696	
atg aaa gat ctg tca ggc aaa cat cct gtg tct gct ttg atg gag atc	5136
Met Lys Asp Leu Ser Gly Lys His Pro Val Ser Ala Leu Met Glu Ile	
1697 1702 1707 1712	
tgt aat aaa aga agg tgg caa cca cct gaa ttt cta ttg gtc cat gat	5184
Cys Asn Lys Arg Arg Trp Gln Pro Pro Glu Phe Leu Leu Val His Asp	
1713 1718 1723 1728	
agt ggc cct gat cat cgc aaa cat ttt ctc ttt agg gta ttg ata aat	5232
Ser Gly Pro Asp His Arg Lys His Phe Leu Phe Arg Val Leu Ile Asn	
1729 1734 1739 1744	
gga agc gct tac cag ccc agc ttt gcc agc cct aat aag aag cat gct	5280
Gly Ser Ala Tyr Gln Pro Ser Phe Ala Ser Pro Asn Lys Lys His Ala	
1745 1750 1755 1760	
aaa gcc aca gca gct act gtg gtt ctt caa gca atg ggc ctt gta cca	5328
Lys Ala Thr Ala Ala Thr Val Val Leu Gln Ala Met Gly Leu Val Pro	
1761 1766 1771 1776	
aag gac ctc atg gct aat gcc act tgc ttc agg agt gcc tca cgt aga	5376
Lys Asp Leu Met Ala Asn Ala Thr Cys Phe Arg Ser Ala Ser Arg Arg	
1777 1782 1787 1792	
tag attg aggttttata ataatcattt cagaatttta ctctgcatca caatgtattt	5433
*	
1793	
cctctttaat gttgtaaata tttggcaatt taagacattg tgtaaaaagc aatctgtaaa	5493
aacatctcca ggctttgatt tttgtaccat ggaaattgta tttaaccata cagggttttg	5553
gtatgtttat attgtttacc ttagtgatgt atttgtttaa gtggctaaca tccaaacgac	5613
tgtttgaagg catcagagta atcttcagtg tggaatgtta aataacgctt ttatactgta	5673
ttttgtacta tgatgtaact ccccttcctt atggctaggc tactgtaaca cttgcctgta	5733

atcagtgaag ggctgtgcac cttgtactat ttcacaatgg gttctgctgg acagataatg 5793  
ggccagtgtt attgaggtga tcaagatctg ttccacaggg ctaatgccac catctcccct 5853  
caaaattttg tagaggttct aaaaagaaag tggatatgtg tgtgatgac agcactaagt 5913  
cctgcattcc tgttaaagcc acttgggtca taagaaggga gtaaaaaatg aagtctgact 5973  
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Met Glu Gly Ile  
1  
agt aat ttc aag aca cca agc aaa tta tca gaa aaa aag aaa tct gta 162  
Ser Asn Phe Lys Thr Pro Ser Lys Leu Ser Glu Lys Lys Lys Ser Val  
5 10 15 20  
tta tgt tca act cca act ata aat atc ccg gcc tct ccg ttt atg cag 210  
Leu Cys Ser Thr Pro Thr Ile Asn Ile Pro Ala Ser Pro Phe Met Gln  
21 26 31 36  
aag ctt ggc ttt ggt act ggg gta aat gtg tac cta atg aaa aga tct 258  
Lys Leu Gly Phe Gly Thr Gly Val Asn Val Tyr Leu Met Lys Arg Ser  
37 42 47 52  
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Pro Arg Gly Leu Ser His Ser Pro Trp Ala Val Lys Lys Ile Asn Pro  
53 58 63 68  
ata tgt aat gat cat tat cga agt gtg tat caa aag aga cta atg gat 354

Ile Cys Asn Asp His Tyr Arg Ser Val Tyr Gln Lys Arg Leu Met Asp  
69 74 79 84

gaa gct aag att ttg aaa agc ctt cat cat cca aac att gtt ggt tat 402  
Glu Ala Lys Ile Leu Lys Ser Leu His His Pro Asn Ile Val Gly Tyr  
85 90 95 100

cgt gct ttt act gaa gcc aat gat ggc agt ctg tgt ctt gct atg gaa 450  
Arg Ala Phe Thr Glu Ala Asn Asp Gly Ser Leu Cys Leu Ala Met Glu  
101 106 111 116

tat gga ggt gaa aag tct cta aat gac tta ata gaa gaa cga tat aaa 498  
Tyr Gly Gly Glu Lys Ser Leu Asn Asp Leu Ile Glu Glu Arg Tyr Lys  
117 122 127 132

gcc agc caa gat cct ttt cca gca gcc ata att tta aaa gtt gct ttg 546  
Ala Ser Gln Asp Pro Phe Pro Ala Ala Ile Ile Leu Lys Val Ala Leu  
133 138 143 148

aat atg gca aga ggg tta aag tat ctg cac caa gaa aag aaa ctg ctt 594  
Asn Met Ala Arg Gly Leu Lys Tyr Leu His Gln Glu Lys Lys Leu Leu  
149 154 159 164

cat gga gac ata aag tct tca aat gtt gta att aaa ggc gat ttt gaa 642  
His Gly Asp Ile Lys Ser Ser Asn Val Val Ile Lys Gly Asp Phe Glu  
165 170 175 180

aca att aaa atc tgt gat gta gga gtc tct cta cca ctg gat gaa aat 690  
Thr Ile Lys Ile Cys Asp Val Gly Val Ser Leu Pro Leu Asp Glu Asn  
181 186 191 196

atg act gtg act gac cct gag gct tgt tac att ggc aca gag cca tgg 738  
Met Thr Val Thr Asp Pro Glu Ala Cys Tyr Ile Gly Thr Glu Pro Trp  
197 202 207 212

aaa ccc aaa gaa gct gtg gag gag aat ggt gtt att act gac aag gca 786  
Lys Pro Lys Glu Ala Val Glu Glu Asn Gly Val Ile Thr Asp Lys Ala  
213 218 223 228

gac ata ttt gcc ttt ggc ctt act ttg tgg gaa atg atg act tta tcg 834  
Asp Ile Phe Ala Phe Gly Leu Thr Leu Trp Glu Met Met Thr Leu Ser  
229 234 239 244

att cca cac att aat ctt tca aat gat gat gat gat gaa gat aaa act 882  
Ile Pro His Ile Asn Leu Ser Asn Asp Asp Asp Asp Glu Asp Lys Thr  
245 250 255 260

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Phe Asp Glu Ser Asp Phe Asp Asp Glu Ala Tyr Tyr Ala Ala Leu Gly  
261 266 271 276

act agg cca cct att aat atg gaa gaa ctg gat gaa tca tac cag aaa 978  
Thr Arg Pro Pro Ile Asn Met Glu Glu Leu Asp Glu Ser Tyr Gln Lys  
277 282 287 292

gta att gaa ctc ttc tct gta tgc act aat gaa gac cct aaa gat cgt 1026  
Val Ile Glu Leu Phe Ser Val Cys Thr Asn Glu Asp Pro Lys Asp Arg

293	298	303	308	
cct tct gct gca cac att gtt gaa gct ctg gaa aca gat gtc tag tga				1074
Pro Ser Ala Ala His Ile Val Glu Ala Leu Glu Thr Asp Val *				
309	314	319		

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cactttgtac agtacaaaat aaagtctaca ttgttttaaa acaaaaaaaaa aaaaaaaaaa	1494
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ccgtccgcgg gcaccgggtt ggcgctgccc gagtgaacc gacagtttgc gagcctcggc	480
tgcaagtggc ctctcctccc cgcgggttgtt gttcagtgtc gggtgagggc tgcgagtgtg	540
gcaagttgca aagagagcct cagaggtccg aagagcgctg cgctcctact cgcgttcgct	600

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agg ttc ccg aag gcc gac ctg gcc gct gca gga gtt atg tta ctt tgc Arg Phe Pro Lys Ala Asp Leu Ala Ala Ala Gly Val Met Leu Leu Cys 3 8 13 18	823
cac ttc ttc acg gac cag ttt cag ttc gcc gat ggg aaa ccc gga gac His Phe Phe Thr Asp Gln Phe Gln Phe Ala Asp Gly Lys Pro Gly Asp 19 24 29 34	871
caa atc ctt gat tgg cag tat gga gtt act cag gcc ttc cct cac aca Gln Ile Leu Asp Trp Gln Tyr Gly Val Thr Gln Ala Phe Pro His Thr 35 40 45 50	919
gag gag gag gtg gaa gtt gat tca cac gcg tac agc cac agg tgg aaa Glu Glu Glu Val Glu Val Asp Ser His Ala Tyr Ser His Arg Trp Lys 51 56 61 66	967
aga aac ttg gac ttt ctc aag gcg gta gac acg aac cga gca agc gtc Arg Asn Leu Asp Phe Leu Lys Ala Val Asp Thr Asn Arg Ala Ser Val 67 72 77 82	1015
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gat ggg cag gac aat aac act cag atc gag gag gat aca gac cac aat Asp Gly Gln Asp Asn Asn Thr Gln Ile Glu Glu Asp Thr Asp His Asn 99 104 109 114	1111
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tta tgg gtg aac ata gac caa atg gaa aaa gat aaa gtg aag att cat Leu Trp Val Asn Ile Asp Gln Met Glu Lys Asp Lys Val Lys Ile His 131 136 141 146	1207
gga ata ttg tcc aat act cat cgg caa gct gca aga gtg aat ctg tcc Gly Ile Leu Ser Asn Thr His Arg Gln Ala Ala Arg Val Asn Leu Ser 147 152 157 162	1255
ttc gat ttt cca ttt tat ggc cac ttc cta cgt gaa atc act gtg gca Phe Asp Phe Pro Phe Tyr Gly His Phe Leu Arg Glu Ile Thr Val Ala 163 168 173 178	1303
acc ggg ggt ttc ata tac act gga gaa gtc gta cat cga atg cta aca Thr Gly Gly Phe Ile Tyr Thr Gly Glu Val Val His Arg Met Leu Thr 179 184 189 194	1351
gcc aca cag tac ata gca cct tta atg gca aat ttc gat ccc agt gta	1399

Ala Thr Gln Tyr Ile	Ala Pro Leu Met Ala Asn Phe Asp Pro Ser Val	
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Ser Arg Asn Ser Thr Val Arg Tyr Phe Asp Asn Gly Thr Ala Leu Val		
211	216 221 226	
gtc cag tgg gac cat gta cat ctc cag gat aat tat aac ctg gga agc		1495
Val Gln Trp Asp His Val His Leu Gln Asp Asn Tyr Asn Leu Gly Ser		
227	232 237 242	
ttc aca ttc cag gca acc ctg ctc atg gat gga cga atc atc ttt gga		1543
Phe Thr Phe Gln Ala Thr Leu Leu Met Asp Gly Arg Ile Ile Phe Gly		
243	248 253 258	
tac aaa gaa att cct gtc ttg gtc aca cag ata agt tca acc aat cat		1591
Tyr Lys Glu Ile Pro Val Leu Val Thr Gln Ile Ser Ser Thr Asn His		
259	264 269 274	
cca gtg aaa gtc gga ctg tcc gat gca ttt gtc gtt gtc cac agg atc		1639
Pro Val Lys Val Gly Leu Ser Asp Ala Phe Val Val Val His Arg Ile		
275	280 285 290	
caa caa att ccc aat gtt cga aga aga aca att tat gaa tac cac cga		1687
Gln Gln Ile Pro Asn Val Arg Arg Arg Thr Ile Tyr Glu Tyr His Arg		
291	296 301 306	
gtg gag cta caa atg tca aaa att acc aac att tcg gct gtg gag atg		1735
Val Glu Leu Gln Met Ser Lys Ile Thr Asn Ile Ser Ala Val Glu Met		
307	312 317 322	
acc cca tta ccc aca tgc ctc cag ttt aac aga tgt ggc ccc tgt gta		1783
Thr Pro Leu Pro Thr Cys Leu Gln Phe Asn Arg Cys Gly Pro Cys Val		
323	328 333 338	
tct tct cag att ggc ttc aac tgc agt tgg tgt agt aaa ctt caa aga		1831
Ser Ser Gln Ile Gly Phe Asn Cys Ser Trp Cys Ser Lys Leu Gln Arg		
339	344 349 354	
tgt tcc agt gga ttt gat cgt cat cgg cag gac tgg gtg gac agt gga		1879
Cys Ser Ser Gly Phe Asp Arg His Arg Gln Asp Trp Val Asp Ser Gly		
355	360 365 370	
tgc cct gaa gag tca aaa gag aag atg tgt gag aat aca gaa cca gtg		1927
Cys Pro Glu Glu Ser Lys Glu Lys Met Cys Glu Asn Thr Glu Pro Val		
371	376 381 386	
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Glu Thr Ser Ser Arg Thr Thr Thr Thr Ile Gly Ala Thr Thr Thr Gln		
387	392 397 402	
ttc agg gtc cta act acc acc aga aga gca gtg act tct cag ttt ccc		2023
Phe Arg Val Leu Thr Thr Thr Arg Arg Ala Val Thr Ser Gln Phe Pro		
403	408 413 418	
acc agc ctc cct aca gaa gat gat acc aag ata gca cta cat cta aaa		2071
Thr Ser Leu Pro Thr Glu Asp Asp Thr Lys Ile Ala Leu His Leu Lys		

419	424	429	434	
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Asp Asn Gly Ala Ser Thr Asp Asp Ser Ala Ala Glu Lys Lys Gly Gly				
435	440	445	450	
acc ctc cac gct ggc ctc atc gtt gga atc ctc atc ctg gtc ctc att				2167
Thr Leu His Ala Gly Leu Ile Val Gly Ile Leu Ile Leu Val Leu Ile				
451	456	461	466	
gta gcc aca gcc att ctt gtg aca gtc tat atg tat cac cac cat gta				2215
Val Ala Thr Ala Ile Leu Val Thr Val Tyr Met Tyr His His His Val				
467	472	477	482	
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	Met Ala	
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agg ttc ccg aag gcc gac ctg gcc gct gca gga gtt atg tta ctt tgc		823
Arg Phe Pro Lys Ala Asp Leu Ala Ala Ala Gly Val Met Leu Leu Cys		
3 8 13 18		
cac ttc ttc acg gac cag ttt cag ttc gcc gat ggg aaa ccc gga gac		871
His Phe Phe Thr Asp Gln Phe Gln Phe Ala Asp Gly Lys Pro Gly Asp		
19 24 29 34		
caa atc ctt gat tgg cag tat gga gtt act cag gcc ttc cct cac aca		919
Gln Ile Leu Asp Trp Gln Tyr Gly Val Thr Gln Ala Phe Pro His Thr		
35 40 45 50		
gag gag gag gtg gaa gtt gat tca cac gcg tac agc cac agg tgg aaa		967
Glu Glu Glu Val Glu Val Asp Ser His Ala Tyr Ser His Arg Trp Lys		
51 56 61 66		
aga aac ttg gac ttt ctc aag gcg gta gac acg aac cga gca agc gtc		1015
Arg Asn Leu Asp Phe Leu Lys Ala Val Asp Thr Asn Arg Ala Ser Val		
67 72 77 82		
ggc caa gac tct cct gag ccc aga agc ttc aca gac ctg ctg ctg gat		1063
Gly Gln Asp Ser Pro Glu Pro Arg Ser Phe Thr Asp Leu Leu Leu Asp		
83 88 93 98		
gat ggg cag gac aat aac act cag atc gag gag gat aca gac cac aat		1111
Asp Gly Gln Asp Asn Asn Thr Gln Ile Glu Glu Asp Thr Asp His Asn		
99 104 109 114		
tac tat ata tct cga ata tat ggt cca tct gat tct gcc agc cgg gat		1159
Tyr Tyr Ile Ser Arg Ile Tyr Gly Pro Ser Asp Ser Ala Ser Arg Asp		
115 120 125 130		
tta tgg gtg aac ata gac caa atg gaa aaa gat aaa gtg aag att cat		1207
Leu Trp Val Asn Ile Asp Gln Met Glu Lys Asp Lys Val Lys Ile His		
131 136 141 146		
gga ata ttg tcc aat act cat cgg caa gct gca aga gtg aat ctg tcc		1255
Gly Ile Leu Ser Asn Thr His Arg Gln Ala Ala Arg Val Asn Leu Ser		
147 152 157 162		
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Phe Asp Phe Pro Phe Tyr Gly His Phe Leu Arg Glu Ile Thr Val Ala		
163 168 173 178		
acc ggg ggt ttc ata tac act gga gaa gtc gta cat cga atg cta aca		1351
Thr Gly Gly Phe Ile Tyr Thr Gly Glu Val Val His Arg Met Leu Thr		
179 184 189 194		
gcc aca cag tac ata gca cct tta atg gca aat ttc gat ccc agt gta		1399
Ala Thr Gln Tyr Ile Ala Pro Leu Met Ala Asn Phe Asp Pro Ser Val		
195 200 205 210		
tcc aga aat tca act gtc aga tat ttt gat aat ggc aca gca ctt gtg		1447



Ser Arg Asn Ser Thr Val Arg Tyr Phe Asp Asn Gly Thr Ala Leu Val	
211 216 221 226	
gtc cag tgg gac cat gta cat ctc cag gat aat tat aac ctg gga agc	1495
Val Gln Trp Asp His Val His Leu Gln Asp Asn Tyr Asn Leu Gly Ser	
227 232 237 242	
ttc aca ttc cag gca acc ctg ctc atg gat gga cga atc atc ttt gga	1543
Phe Thr Phe Gln Ala Thr Leu Leu Met Asp Gly Arg Ile Ile Phe Gly	
243 248 253 258	
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Tyr Lys Glu Ile Pro Val Leu Val Thr Gln Ile Ser Ser Thr Asn His	
259 264 269 274	
cca gtg aaa gtc gga ctg tcc gat gca ttt gtc gtt gtc cac agg atc	1639
Pro Val Lys Val Gly Leu Ser Asp Ala Phe Val Val Val His Arg Ile	
275 280 285 290	
caa caa att ccc aat gtt cga aga aga aca att tat gaa tac cac cga	1687
Gln Gln Ile Pro Asn Val Arg Arg Arg Thr Ile Tyr Glu Tyr His Arg	
291 296 301 306	
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Val Glu Leu Gln Met Ser Lys Ile Thr Asn Ile Ser Ala Val Glu Met	
307 312 317 322	
acc cca tta ccc aca tgc ctc cag ttt aac aga tgt ggc ccc tgt gta	1783
Thr Pro Leu Pro Thr Cys Leu Gln Phe Asn Arg Cys Gly Pro Cys Val	
323 328 333 338	
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Ser Ser Gln Ile Gly Phe Asn Cys Ser Trp Cys Ser Lys Leu Gln Arg	
339 344 349 354	
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Cys Ser Ser Gly Phe Asp Arg His Arg Gln Asp Trp Val Asp Ser Gly	
355 360 365 370	
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Cys Pro Glu Glu Ser Lys Glu Lys Met Cys Glu Asn Thr Glu Pro Val	
371 376 381 386	
gaa act tct tct cga acc acc aca acc ata gga gcg aca acc acc cag	1975
Glu Thr Ser Ser Arg Thr Thr Thr Thr Ile Gly Ala Thr Thr Thr Gln	
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ttc agg gtc cta act acc acc aga aga gca gtg act tct cag ttt ccc	2023
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403 408 413 418	
acc agc ctc cct aca gaa gat gat acc aag ata gca cta cat cta aaa	2071
Thr Ser Leu Pro Thr Glu Asp Asp Thr Lys Ile Ala Leu His Leu Lys	
419 424 429 434	
gat aat gga gct tct aca gat gac agt gca gct gag aag aaa ggg gga	2119
Asp Asn Gly Ala Ser Thr Asp Asp Ser Ala Ala Glu Lys Lys Gly Gly	

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Thr Leu His Ala Gly Leu Ile Ile Gly Ile Leu Ile Leu Val Leu Ile				
451	456	461	466	
gta gcc aca gcc att ctt gtg aca gtc tat atg tat cac cac cca aca				2215
Val Ala Thr Ala Ile Leu Val Thr Val Tyr Met Tyr His His Pro Thr				
467	472	477	482	
tca gca gcc agc atc ttc ttt att gag aga cgc cca agc aga tgg cct				2263
Ser Ala Ala Ser Ile Phe Phe Ile Glu Arg Arg Pro Ser Arg Trp Pro				
483	488	493	498	
gcg atg aag ttt aga aga ggc tct gga cat cct gcc tat gct gaa gtt				2311
Ala Met Lys Phe Arg Arg Gly Ser Gly His Pro Ala Tyr Ala Glu Val				
499	504	509	514	
gaa cca gtt gga gag aaa gaa ggc ttt att gta tca gag cag tgc taa				2359
Glu Pro Val Gly Glu Lys Glu Gly Phe Ile Val Ser Glu Gln Cys *				
515	520	525	530	
aatttctagg acagaacaac accagtactg gtttacaggt gttaagacta aaattttgcc				2419
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ggtggccagc gccaggacgc acatcccgcg gacaccgacc ccagatgtaa agcgggaccc	180

cagccccctcg ccccccgggcg cgatcgacag tctcgccagc gtctcctctg ccaaaaccca 240

gggctggaag atg tgg cag ccg gcc acg gag cgc ctg cag cac ttt cag 289  
Met Trp Gln Pro Ala Thr Glu Arg Leu Gln His Phe Gln  
1 5 10

acc atg ctg aag tct aaa ttg aat gtc tta aca ctg aaa aag gaa cct 337  
Thr Met Leu Lys Ser Lys Leu Asn Val Leu Thr Leu Lys Lys Glu Pro  
14 19 24 29

ctc cca gcg gtc atc ttc cat gag ccg gag gcc att gag ctg tgc acg 385  
Leu Pro Ala Val Ile Phe His Glu Pro Glu Ala Ile Glu Leu Cys Thr  
30 35 40 45

acc aca ccg ctg atg aag aca agg act cac agt ggc tgc aag gtt acc 433  
Thr Thr Pro Leu Met Lys Thr Arg Thr His Ser Gly Cys Lys Val Thr  
46 51 56 61

tac ctg ggc aaa gtc tcc acc act ggc atg cag ttt ttg tca ggc tgc 481  
Tyr Leu Gly Lys Val Ser Thr Thr Gly Met Gln Phe Leu Ser Gly Cys  
62 67 72 77

aca gaa aag cca gtc att gag ctc tgg aag aag cac acg cta gcc cga 529  
Thr Glu Lys Pro Val Ile Glu Leu Trp Lys Lys His Thr Leu Ala Arg  
78 83 88 93

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Asp Glu Lys Asp Lys Gly Ala Leu Asp Asn Leu Leu Ser Gln Leu Ile	
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Pro Gly Lys Leu Arg Ser Asp Ala Gly Leu Glu Ser Asp Thr Ala Met	
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Arg Asn Gly Ile Asp Ile Leu Val Gly Thr Pro Gly Arg Ile Lys Asp				
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ctt aca ttt aag aaa ggg gaa att ctc ctt gta att gaa aaa aaa cct		640
Leu Thr Phe Lys Lys Gly Glu Ile Leu Leu Val Ile Glu Lys Lys Pro		
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Asp Gly Trp Trp Ile Ala Lys Asp Ala Lys Gly Asn Glu Gly Leu Val		
187	192 197 202	
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Pro Arg Thr Tyr Leu Glu Pro Tyr Ser Glu Glu Glu Glu Gly Gln Glu		
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Val Gln Lys Ala Ile Ser Glu Ala Gly Ile Phe Cys Leu Val Asn His		
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Val Ser Phe Cys Tyr Leu Ile Val Leu Met Arg Asn Arg Met Glu Thr		
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Val Glu Asp Thr Asn Gly Ser Glu Thr Gly Phe Arg Ala Trp Asn Val		
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Pro Ser Arg Ile Ser Leu Ile Leu Thr Leu Trp Ser Cys Lys Met Ile				
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Pro Leu Pro Gly Met Ser Ile Gln Val Leu Ser Arg His Val Arg Leu				
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Cys Leu Phe Asp Gly Asn Lys Val Leu Ser Asn Ile His Thr Val Arg				
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gcc aca tgg caa cct aaa aag ccc aaa aca tgg acc ttt tct ccc cag				1408
Ala Thr Trp Gln Pro Lys Lys Pro Lys Thr Trp Thr Phe Ser Pro Gln				
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Val Thr Arg Ile Leu Pro Cys Leu Leu Asp Gly Asp Cys Phe Ile Arg				
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Ser Asn Ser Ala Ser Pro Asp Leu Gly Ile Leu Phe Glu Leu Gly Ile				
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Ser Tyr Ile Arg Asn Ser Thr Gly Glu Arg Gly Glu Leu Ser Cys Gly				
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Trp Val Phe Leu Lys Leu Phe Asp Ala Ser Gly Val Pro Ile Pro Ala				
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Lys Thr Tyr Glu Leu Phe Leu Asn Gly Gly Thr Pro Tyr Glu Lys Gly				
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Ile Glu Val Asp Pro Ser Ile Ser Arg Arg Ala His Gly Ser Val Phe				
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Tyr Gln Ile Met Thr Met Arg Arg Gln Pro Gln Leu Leu Val Lys Leu				
539	544	549	554	
aga tcc ttg aac aga aga tca aga aat gta cta agt cta ctg cca gaa				1792
Arg Ser Leu Asn Arg Arg Ser Arg Asn Val Leu Ser Leu Leu Pro Glu				
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Thr Leu Ile Gly Asn Met Cys Ser Ile His Leu Leu Ile Phe Tyr Arg				
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Gln Ile Leu Gly Asp Val Leu Leu Lys Asp Arg Met Ser Leu Gln Ser				
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90	95	100	105	
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106	111	116	121	
acc att gtg aat aca	gtg gga ttt ggt gac	caa ata aat aaa gaa gag	494	
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Ser Arg Ile His Val	Cys Leu Tyr Phe Ile	Ser Pro Thr Gly His Ser		
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186	191	196	201	
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Trp His Asp Gly Lys Gln Val His Leu Val Ser Pro Leu Thr Thr Tyr	
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Ala Phe His Leu Leu Phe Asp Phe Leu Ala Phe Lys Asn Asp Ile Ser	
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Phe Trp Lys Lys Lys Lys Ser Met Ile Gly Met Ser Thr Lys Ala Val	
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Ile Glu Leu Trp Lys Val Lys Lys Ala Leu Lys Met Thr Ile Phe Trp	
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Pro His Thr Asp *				
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	Met Tyr Gly Ile Val Tyr Thr Arg Pro Cys Ser	
	1 5	
ggc gac gcc aac tgc atc	cag ccc tac ctg gcg cgg cgg ccc aag ctg	159
Gly Asp Ala Asn Cys Ile	Gln Pro Tyr Leu Ala Arg Arg Pro Lys Leu	
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Gln Leu Ser Val Tyr Thr	Thr Thr Arg Ser His Leu Gly Ala Glu Asn	

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aac atc gac ctg gtc ttg aat gtg gaa gac ttt gat gtg gag tcc aaa				255
Asn Ile Asp Leu Val Leu Asn Val Glu Asp Phe Asp Val Glu Ser Lys				
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Phe Glu Arg Thr Val Asn Val Ser Val Pro Lys Lys Thr Arg Asn Asn				
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Gly Thr Leu Tyr Ala Tyr Ile Phe Leu His His Ala Gly Val Leu Pro				
76	81	86	91	
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Trp His Asp Gly Lys Gln Val His Leu Val Ser Pro Leu Thr Thr Tyr				
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atg gtc ccc aag cca gaa gaa atc aac ctg ctc acc ggg gag tct gat				447
Met Val Pro Lys Pro Glu Glu Ile Asn Leu Leu Thr Gly Glu Ser Asp				
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aca cag atc gag gcg gag aag aag ccg acg agt gcc ctg gat gag cca				495
Thr Gln Ile Glu Ala Glu Lys Lys Pro Thr Ser Ala Leu Asp Glu Pro				
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Val Ser His Trp Arg Pro Arg Leu Ala Leu Asn Val Met Ala Asp Asn				
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Phe Val Phe Asp Gly Ser Ser Leu Pro Ala Asp Val His Arg Tyr Met				
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Ser Thr Thr Glu Leu Pro Leu Thr Val Ser Tyr Asp Lys Val Ser Leu				
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Gly Arg Leu Arg Phe Trp Ile His Met Gln Asp Ala Val Tyr Ser Leu				
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Gln Gln Phe Gly Phe Ser Glu Lys Asp Ala Asp Glu Val Lys Gly Ile				
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Phe Trp Lys Lys Lys Lys Ser Met Ile Gly Met Ser Thr Lys Ala Val	
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Leu Trp Arg Cys Phe Ser Thr Val Val Ile Phe Leu Phe Leu Leu Asp	
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Ile Lys Tyr Lys Ser Trp Tyr Ser Trp Leu Ile Asn Ser Phe Val Asn	
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Lys Ser Val Ala His Leu Pro Trp Lys Ala Phe Thr Tyr Lys Ala Phe	
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Asn Thr Phe Ile Asp Asp Val Phe Ala Phe Ile Ile Thr Met Pro Thr	
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Ser His Arg Leu Ala Cys Phe Arg Asp Asp Val Val Phe Leu Val Tyr	
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Leu Tyr Gln Arg Trp Leu Tyr Pro Val Asp Lys Arg Arg Val Asn Glu	
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Phe Gly Glu Ser Tyr Glu Glu Lys Ala Thr Arg Ala Pro His Thr Asp	
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Glu Pro Gly Leu Pro Gly Thr Lys Gly Thr Arg Gly Pro Pro Gly Ala				
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cctatcattc catattggaa gaagagattt ctacac atg aaa aaa atg cct ttg 234  
Met Lys Lys Met Pro Leu  
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Phe Ser Lys Ser His Lys Asn Pro Ala Glu Ile Val Lys Ile Leu Lys  
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Gln Glu Leu Tyr Ser Ser Gly Leu Leu Val Thr Leu Ile Ala Asp Leu	
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Gln Leu Leu Ile Leu Gln Leu Leu Glu Lys Ile Ser Phe Leu Glu Gly	
161 166 171 176	
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Glu Asn Asn Glu Leu Gln Ser Arg Leu Asp Tyr Leu Thr Glu Thr Gln	
177 182 187 192	
gcc aag acc gaa gtg gaa acc aga gag ata gga gtg ggc tgt gat ctt	681
Ala Lys Thr Glu Val Glu Thr Arg Glu Ile Gly Val Gly Cys Asp Leu	
193 198 203 208	
cta ccc agc caa aca ggc agg act cgt gaa att gtg atg cct tct agg	729
Leu Pro Ser Gln Thr Gly Arg Thr Arg Glu Ile Val Met Pro Ser Arg	
209 214 219 224	

aac tac acc cca tac aca aga gtc ctg gag tta acc atg aag aaa act 777  
 Asn Tyr Thr Pro Tyr Thr Arg Val Leu Glu Leu Thr Met Lys Lys Thr  
 225 230 235 240

ctg act tag gcactca gaggcataca ctttttacag atggacaaaa gctctggaac 833  
 Leu Thr \*  
 241

cctgtggcctt caaatccttt gggaaggggtg actgttggtt cccctacaca cagtgtgaagc 893

cggaatggga atcgctgagg ctctgatcca cttctaagac aggaaggaaa gtgaaggcag 953

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aaaga atg tct tcc aag caa gcc acc tct cca ttt gcc tgt gca gct 407  
 Met Ser Ser Lys Gln Ala Thr Ser Pro Phe Ala Cys Ala Ala  
 1 5 10

gat gga gag gat gca atg acc cag gat tta acc tca agg gaa aag gaa 455  
 Asp Gly Glu Asp Ala Met Thr Gln Asp Leu Thr Ser Arg Glu Lys Glu  
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gag ggc agt gat caa cat gtg gcc tcc cat ctg cct ctg cac ccc ata 503  
 Glu Gly Ser Asp Gln His Val Ala Ser His Leu Pro Leu His Pro Ile  
 31 36 41 46

atg cac aac aaa cct cac tct gag gag cta cca aca ctt gtc agt acc 551  
 Met His Asn Lys Pro His Ser Glu Glu Leu Pro Thr Leu Val Ser Thr  
 47 52 57 62

att caa caa gat gct gac tgg gac agc gtt ctg tca tct cag caa aga 599  
 Ile Gln Gln Asp Ala Asp Trp Asp Ser Val Leu Ser Ser Gln Gln Arg

63	68	73	78	
atg gaa tca gag aat aat aag tta tgt tcc cta tat tcc ttc cga aat				647
Met Glu Ser Glu Asn Asn Lys Leu Cys Ser Leu Tyr Ser Phe Arg Asn				
79	84	89	94	
acc tct acc tca cca cat aag cct gac gaa ggg agt cgg gac cgt gag				695
Thr Ser Thr Ser Pro His Lys Pro Asp Glu Gly Ser Arg Asp Arg Glu				
95	100	105	110	
ata atg acc agt gtt act ttt gga acc cca gag cgc cgc aaa ggg agt				743
Ile Met Thr Ser Val Thr Phe Gly Thr Pro Glu Arg Arg Lys Gly Ser				
111	116	121	126	
ctt gcc gat gtg gtg gac aca ctg aaa cag aag aag ctt gag gaa atg				791
Leu Ala Asp Val Val Asp Thr Leu Lys Gln Lys Lys Leu Glu Glu Met				
127	132	137	142	
act cgg act gaa caa gag gat tcc tcc tgc atg gaa aaa cta ctt tca				839
Thr Arg Thr Glu Gln Glu Asp Ser Ser Cys Met Glu Lys Leu Leu Ser				
143	148	153	158	
aaa gat tgg aag gaa aaa atg gaa aga cta aat acc agt gaa ctt ctt				887
Lys Asp Trp Lys Glu Lys Met Glu Arg Leu Asn Thr Ser Glu Leu Leu				
159	164	169	174	
gga gaa att aaa ggt aca cct gag agc ctg gca gaa aaa gaa cgg cag				935
Gly Glu Ile Lys Gly Thr Pro Glu Ser Leu Ala Glu Lys Glu Arg Gln				
175	180	185	190	
ctc tcc acc atg att acc cag ctg atc agt tta cgg gag cag cta ctg				983
Leu Ser Thr Met Ile Thr Gln Leu Ile Ser Leu Arg Glu Gln Leu Leu				
191	196	201	206	
gca gcg cat gat gaa cag aaa aaa ctg gca gcg tca caa att gag aaa				1031
Ala Ala His Asp Glu Gln Lys Lys Leu Ala Ala Ser Gln Ile Glu Lys				
207	212	217	222	
caa cgg cag caa atg gac ctt gct cgc caa cag caa gaa cag att gcg				1079
Gln Arg Gln Gln Met Asp Leu Ala Arg Gln Gln Gln Glu Gln Ile Ala				
223	228	233	238	
aga caa cag cag caa ctt ctg caa cag cag cac aaa att aat ctc ctg				1127
Arg Gln Gln Gln Gln Leu Leu Gln Gln Gln His Lys Ile Asn Leu Leu				
239	244	249	254	
cag caa cag atc cag cag gtt cag ggt cac atg cct ccg ctc atg atc				1175
Gln Gln Gln Ile Gln Gln Val Gln Gly His Met Pro Pro Leu Met Ile				
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cca att ttt cca cat gac cag cgg act ctg gca gca gct gct gct gcc				1223
Pro Ile Phe Pro His Asp Gln Arg Thr Leu Ala Ala Ala Ala Ala Ala				
271	276	281	286	
caa cag gga ttc ctc ttc ccc cct gga ata aca tac aaa cca ggt gat				1271
Gln Gln Gly Phe Leu Phe Pro Pro Gly Ile Thr Tyr Lys Pro Gly Asp				
287	292	297	302	

aac tac ccc gta cag ttc att cca tca aca atg gca gct gct gct gct	1319
Asn Tyr Pro Val Gln Phe Ile Pro Ser Thr Met Ala Ala Ala Ala	
303 308 313 318	
tct gga ctc agc cct tta cag ctc cag aag ggt cat gtc tcc cac cca	1367
Ser Gly Leu Ser Pro Leu Gln Leu Gln Lys Gly His Val Ser His Pro	
319 324 329 334	
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Gln Ile Asn Gln Arg Leu Lys Gly Leu Ser Asp Arg Phe Gly Arg Asn	
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Leu Asp Thr Phe Glu His Gly Gly Gly His Ser Tyr Asn His Lys Gln	
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Ile Glu Gln Leu Tyr Ala Ala Gln Leu Ala Ser Met Gln Val Ser Pro	
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Gly Ala Lys Met Pro Ser Thr Pro Gln Pro Pro Asn Thr Ala Gly Thr	
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Val Ser Pro Thr Gly Ile Lys Asn Glu Lys Arg Gly Thr Ser Pro Val	
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Asn Leu Phe Pro Ala Ser Lys Thr Ser Pro Val Asn Leu Pro Asn Lys	
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Ser Ser Ile Pro Ser Pro Ile Gly Gly Ser Leu Gly Arg Gly Ser Ser	
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Leu Asp Ile Leu Ser Ser Leu Asn Ser Pro Ala Leu Phe Gly Asp Gln	
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Asp Thr Val Met Lys Ala Ile Gln Glu Ala Arg Lys Met Arg Glu Gln	
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Ile Gln Arg Glu Gln Gln Gln Gln Gln Pro His Gly Val Asp Gly Lys	
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Leu Ser Ser Ile Asn Asn Met Gly Leu Asn Ser Cys Arg Asn Glu Lys	
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Asn Glu Asp Gly Lys Leu Gly Pro Gly Val Ile Asp Leu Thr Arg Pro	
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Glu Asp Ala Glu Gly Gly Ala Thr Val Ala Glu Ala Arg Val Tyr Arg	
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Asp Ala Arg Gly Leu Pro Ala Ala Ser His Thr Leu Ser Asp His Met	
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Asn Ala Phe Ile Gly Leu Gly Lys Gly *	
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cctggagccg acaccaccgc catc   atg ccg gcc gtg tcc aag ggc gat ggg      171
                               Met Pro Ala Val Ser Lys Gly Asp Gly
                               1               5

atg cgg ggg ctc gcg gtg ttc atc tcc gac atc cgg aac tgt aag agc      219
Met Arg Gly Leu Ala Val Phe Ile Ser Asp Ile Arg Asn Cys Lys Ser
 10                15                20                25

aaa gag gcg gaa att aag aga atc aac aag gaa ctg gcc aac atc cgc      267
Lys Glu Ala Glu Ile Lys Arg Ile Asn Lys Glu Leu Ala Asn Ile Arg
 26                31                36                41

tcc aag ttc aaa gga gac aaa gcc ttg gat ggc tac agt aag aaa aaa      315
Ser Lys Phe Lys Gly Asp Lys Ala Leu Asp Gly Tyr Ser Lys Lys Lys
 42                47                52                57

tat gtg tgt aaa ctg ctt ttc atc ttc ctg ctt ggc cat gac att gac      363
Tyr Val Cys Lys Leu Leu Phe Ile Phe Leu Leu Gly His Asp Ile Asp
 58                63                68                73

ttt ggg cac atg gag gct gtg aat ctg ttg agt tcc aat aaa tac aca      411
Phe Gly His Met Glu Ala Val Asn Leu Leu Ser Ser Asn Lys Tyr Thr
 74                79                84                89

gag aag caa ata ggt tac ctg ttc att tct gtg ctg gtg aac tcg aac      459
Glu Lys Gln Ile Gly Tyr Leu Phe Ile Ser Val Leu Val Asn Ser Asn
 90                95                100               105

tcg gag ctg atc cgc ctc atc aac aac gcc atc aag aat gac ctg gcc      507
Ser Glu Leu Ile Arg Leu Ile Asn Asn Ala Ile Lys Asn Asp Leu Ala
106                111                116                121

agc cgc aac ccc acc ttc atg tgc ctg gcc ctg cac tgc atc gcc aac      555
Ser Arg Asn Pro Thr Phe Met Cys Leu Ala Leu His Cys Ile Ala Asn
122                127                132                137

gtg ggc agc cgg gag atg ggc gag gcc ttt gcc gct gac atc ccc cgc      603
Val Gly Ser Arg Glu Met Gly Glu Ala Phe Ala Ala Asp Ile Pro Arg
138                143                148                153

atc ctg gtg gcc ggg gac agc atg gac agt gtc aag cag agt gcg gcc      651
Ile Leu Val Ala Gly Asp Ser Met Asp Ser Val Lys Gln Ser Ala Ala
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ctg tgc ctc ctt cga ctg tac aag gcc tcg cct gac ctg gtg ccc atg      699

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Gly	Glu	Trp	Thr	Ala	Arg	Val	Val	His	Leu	Leu	Asn	Asp	Gln	His	Met	
186					191					196					201	
ggt	gtg	gtc	acg	gcc	gcc	gtc	agc	ctc	atc	acc	tgt	ctc	tgc	aag	aag	795
Gly	Val	Val	Thr	Ala	Ala	Val	Ser	Leu	Ile	Thr	Cys	Leu	Cys	Lys	Lys	
202					207					212					217	
aac	cca	gat	gac	ttc	aag	acg	tgc	gtc	tct	ctg	gct	gtg	tcg	cgc	ctg	843
Asn	Pro	Asp	Asp	Phe	Lys	Thr	Cys	Val	Ser	Leu	Ala	Val	Ser	Arg	Leu	
218					223					228					233	
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Ser	Arg	Ile	Val	Ser	Ser	Ala	Ser	Thr	Asp	Leu	Gln	Asp	Tyr	Thr	Tyr	
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tac	ttc	gtc	cca	gca	ccc	tgg	ctc	tcg	gtg	aag	ctc	ctg	cgg	ctg	ctg	939
Tyr	Phe	Val	Pro	Ala	Pro	Trp	Leu	Ser	Val	Lys	Leu	Leu	Arg	Leu	Leu	
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Gln	Cys	Tyr	Pro	Pro	Pro	Glu	Asp	Ala	Ala	Val	Lys	Gly	Arg	Leu	Val	
266					271					276					281	
gaa	tgt	ctg	gag	act	gtg	ctc	aac	aag	gcc	cag	gag	ccc	ccc	aaa	tcc	1035
Glu	Cys	Leu	Glu	Thr	Val	Leu	Asn	Lys	Ala	Gln	Glu	Pro	Pro	Lys	Ser	
282					287					292					297	
aag	aag	gtg	cag	cat	tcc	aac	gcc	aag	aac	gcc	atc	ctc	ttc	gag	acc	1083
Lys	Lys	Val	Gln	His	Ser	Asn	Ala	Lys	Asn	Ala	Ile	Leu	Phe	Glu	Thr	
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atc	agc	ctc	atc	atc	cac	tat	gac	agt	gag	ccc	aac	ctc	ctg	gtt	cgg	1131
Ile	Ser	Leu	Ile	Ile	His	Tyr	Asp	Ser	Glu	Pro	Asn	Leu	Leu	Val	Arg	
314					319					324					329	
gcc	tgc	aac	cag	ctg	ggc	cag	ttc	ctg	cag	cac	cgg	gag	acc	aac	ctg	1179
Ala	Cys	Asn	Gln	Leu	Gly	Gln	Phe	Leu	Gln	His	Arg	Glu	Thr	Asn	Leu	
330					335					340					345	
cgc	tac	ctg	gcc	ctg	gag	agc	atg	tgc	acg	ctg	gcc	agc	tcc	gag	ttc	1227
Arg	Tyr	Leu	Ala	Leu	Glu	Ser	Met	Cys	Thr	Leu	Ala	Ser	Ser	Glu	Phe	
346					351					356					361	
tcc	cat	gaa	gcc	gtc	aag	acg	cac	att	gac	acc	gtc	atc	aat	gcc	ctc	1275
Ser	His	Glu	Ala	Val	Lys	Thr	His	Ile	Asp	Thr	Val	Ile	Asn	Ala	Leu	
362					367					372					377	
aag	acg	gag	cgg	gac	gtc	agc	gtg	cgg	cag	cgg	gcg	gct	gac	ctc	ctc	1323
Lys	Thr	Glu	Arg	Asp	Val	Ser	Val	Arg	Gln	Arg	Ala	Ala	Asp	Leu	Leu	
378					383					388					393	
tac	gcc	atg	tgt	gac	cgg	agc	aat	gcc	aag	cag	atc	gtg	tcg	gag	atg	1371
Tyr	Ala	Met	Cys	Asp	Arg	Ser	Asn	Ala	Lys	Gln	Ile	Val	Ser	Glu	Met	



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Leu Arg Tyr Leu Glu Thr Ala Asp Tyr Ala Ile Arg Glu Glu Ile Val				
410	415	420	425	
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Leu Lys Val Ala Ile Leu Ala Glu Lys Tyr Ala Val Asp Tyr Ser Trp				
426	431	436	441	
tac gtg gac acc atc ctc aac ctc atc cgc att gcg ggc gac tac gtg				1515
Tyr Val Asp Thr Ile Leu Asn Leu Ile Arg Ile Ala Gly Asp Tyr Val				
442	447	452	457	
agt gag gag gtg tgg tac cgt gtg cta cag atc gtc acc aac cgt gat				1563
Ser Glu Glu Val Trp Tyr Arg Val Leu Gln Ile Val Thr Asn Arg Asp				
458	463	468	473	
gac gtc cag ggc tat gcc gcc aag acc gtc ttt gag gcg ctc cag gcc				1611
Asp Val Gln Gly Tyr Ala Ala Lys Thr Val Phe Glu Ala Leu Gln Ala				
474	479	484	489	
cct gcc tgt cac gag aac atg gtg aag gtt ggc ggc tac atc ctt ggg				1659
Pro Ala Cys His Glu Asn Met Val Lys Val Gly Gly Tyr Ile Leu Gly				
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Glu Phe Gly Asn Leu Ile Ala Gly Asp Pro Arg Ser Ser Pro Pro Val				
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Gln Phe Ser Leu Leu His Ser Lys Phe His Leu Cys Ser Val Ala Thr				
522	527	532	537	
cgg gcg ctg ctg ctg tcc acc tac atc aag ttc atc aac ctc tcc ccc				1803
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gag acc aag gcc acc atc cag gcc gtc ctg cgg gcc ggc tcc cag ctg				1851
Glu Thr Lys Ala Thr Ile Gln Gly Val Leu Arg Ala Gly Ser Gln Leu				
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ctc agc tca gtg gcc agc acc gac gtc ctg gcc acg gtg ctg gag gag				1947
Leu Ser Ser Val Ala Ser Thr Asp Val Leu Ala Thr Val Leu Glu Glu				
586	591	596	601	
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Met Pro Pro Phe Pro Glu Arg Glu Ser Ser Ile Leu Ala Lys Leu Lys				
602	607	612	617	
cgc aag aag ggg cca ggg gcc gcc agc gcc ctg gac gat ggc cgg agg				2043
Arg Lys Lys Gly Pro Gly Ala Gly Ser Ala Leu Asp Asp Gly Arg Arg				
618	623	628	633	

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cct gag gac atc ggc cct ccc att ccg gaa gcc gat gag ttg ctg aat Pro Glu Asp Ile Gly Pro Pro Ile Pro Glu Ala Asp Glu Leu Leu Asn 730 735 740 745	2379
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Gln Lys Ile Phe Lys Ala Asn His Pro Met Asp Ala Glu Val Thr Lys	
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Ala Lys Leu Leu Gly Phe Gly Ser Ala Leu Leu Asp Asn Val Asp Pro	
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Asn Pro Glu Asn Phe Val Gly Ala Gly Ile Ile Gln Thr Lys Ala Leu	
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Gln Val Gly Cys Leu Leu Arg Leu Glu Pro Asn Ala Gln Ala Gln Met	
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Tyr Arg Leu Thr Leu Arg Thr Ser Lys Glu Pro Val Ser Arg His Leu	
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Cys Glu Leu Leu Ala Gln Gln Phe *	
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Lys	Glu	Ala	Glu	Ile	Lys	Arg	Ile	Asn	Lys	Glu	Leu	Ala	Asn	Ile	Arg	
26			31							36				41		
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Ser	Lys	Phe	Lys	Gly	Asp	Lys	Ala	Leu	Asp	Gly	Tyr	Ser	Lys	Lys	Lys	
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Tyr	Val	Cys	Lys	Leu	Leu	Phe	Ile	Phe	Leu	Leu	Gly	His	Asp	Ile	Asp	
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Phe	Gly	His	Met	Glu	Ala	Val	Asn	Leu	Leu	Ser	Ser	Asn	Lys	Tyr	Thr	
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Glu	Lys	Gln	Ile	Gly	Tyr	Leu	Phe	Ile	Ser	Val	Leu	Val	Asn	Ser	Asn	
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Ser	Glu	Leu	Ile	Arg	Leu	Ile	Asn	Asn	Ala	Ile	Lys	Asn	Asp	Leu	Ala	
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Ser	Arg	Asn	Pro	Thr	Phe	Met	Cys	Leu	Ala	Leu	His	Cys	Ile	Ala	Asn	
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Val	Gly	Ser	Arg	Glu	Met	Gly	Glu	Ala	Phe	Ala	Ala	Asp	Ile	Pro	Arg	
138			143							148				153		
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Ile	Leu	Val	Ala	Gly	Asp	Ser	Met	Asp	Ser	Val	Lys	Gln	Ser	Ala	Ala	
154			159							164				169		
ctg	tgc	ctc	ctt	cga	ctg	tac	aag	gcc	tgc	cct	gac	ctg	gtg	ccc	atg	699
Leu	Cys	Leu	Leu	Arg	Leu	Tyr	Lys	Ala	Ser	Pro	Asp	Leu	Val	Pro	Met	
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Gly	Glu	Trp	Thr	Ala	Arg	Val	Val	His	Leu	Leu	Asn	Asp	Gln	His	Met	
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Asn Pro Asp Asp Phe Lys Thr Cys Val Ser Leu Ala Val Ser Arg Leu	
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Tyr Phe Val Pro Ala Pro Trp Leu Ser Val Lys Leu Leu Arg Leu Leu	
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Gln Cys Tyr Pro Pro Pro Glu Asp Ala Ala Val Lys Gly Arg Leu Val	
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Glu Cys Leu Glu Thr Val Leu Asn Lys Ala Gln Glu Pro Pro Lys Ser	
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Lys Lys Val Gln His Ser Asn Ala Lys Asn Ala Ile Leu Phe Glu Thr	
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Ile Ser Leu Ile Ile His Tyr Asp Ser Glu Pro Asn Leu Leu Val Arg	
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Ala Cys Asn Gln Leu Gly Gln Phe Leu Gln His Arg Glu Thr Asn Leu	
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Lys Thr Glu Arg Asp Val Ser Val Arg Gln Arg Ala Ala Asp Leu Leu	
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Tyr Ala Met Cys Asp Arg Ser Asn Ala Lys Gln Ile Val Ser Glu Met	
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Leu Arg Tyr Leu Glu Thr Ala Asp Tyr Ala Ile Arg Glu Glu Ile Val	
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Tyr Val Asp Thr Ile Leu Asn Leu Ile Arg Ile Ala Gly Asp Tyr Val				
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Ser Glu Glu Val Trp Tyr Arg Val Leu Gln Ile Val Thr Asn Arg Asp				
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cct gcc tgt cac gag aac atg gtg aag gtt ggc ggc tac atc ctt ggg				1659
Pro Ala Cys His Glu Asn Met Val Lys Val Gly Gly Tyr Ile Leu Gly				
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Gln Phe Ser Leu Leu His Ser Lys Phe His Leu Cys Ser Val Ala Thr				
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Arg Ala Leu Leu Leu Ser Thr Tyr Ile Lys Phe Ile Asn Leu Ser Pro				
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Glu Thr Lys Ala Thr Ile Gln Gly Val Leu Arg Ala Gly Ser Gln Leu				
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Met Pro Pro Phe Pro Glu Arg Glu Ser Ser Ile Leu Ala Lys Leu Lys				
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Arg Lys Lys Gly Pro Gly Ala Gly Ser Ala Leu Asp Asp Gly Arg Arg				
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Asp Pro Ser Ser Asn Asp Ile Asn Gly Gly Met Glu Pro Thr Pro Ser				
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Thr Val Ser Thr Pro Ser Pro Ser Ala Asp Leu Leu Gly Leu Arg Ala				
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Leu Val Asp Val Phe Asp Gly Pro Ala Ala Gln Pro Ser Leu Gly Pro	
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acc ccc gag gag gcc ttc ctc agc cca ggt cct gag gac atc ggc cct	2283
Thr Pro Glu Glu Ala Phe Leu Ser Pro Gly Pro Glu Asp Ile Gly Pro	
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Pro Ile Pro Glu Ala Asp Glu Leu Leu Asn Lys Phe Val Cys Lys Asn	
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Met Lys Ala Leu Leu Leu Leu Val Leu Pro	

1

5



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Ser Asn Thr Pro Lys Pro Leu His Pro Thr Ile Thr Cys His Glu Lys	
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Val Val Asn Ile Gln Lys Asp Pro Gly Glu Ser Leu Gly Met Thr Val	
411 416 421 426	
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Ala Gly Gly Ala Ser His Arg Glu Trp Asp Leu Pro Ile Tyr Val Ile	
427 432 437 442	
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Ser Val Glu Pro Gly Gly Val Ile Ser Arg Asp Gly Arg Ile Lys Thr	
443 448 453 458	
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Gly Asp Ile Leu Leu Asn Val Asp Gly Val Glu Leu Thr Glu Val Ser	

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Leu Lys Ala Leu Glu Val	Lys Glu Tyr Glu Pro	Gln Glu Asp Cys Ser		
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Trp Ser Pro Ser Trp Val	Met Trp Leu Glu Leu	Pro Arg Cys Leu Tyr		
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Phe Ile Lys Ser Ile Val	Glu Gly Thr Pro Ala	Tyr Asn Asp Gly Arg		
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att aga tgt ggt gat att	ctt ctt gct gtc aat	ggt aga agt aca tca		2066
Ile Arg Cys Gly Asp Ile	Leu Leu Ala Val Asn	Gly Arg Ser Thr Ser		
587	592	597	602	
gga atg ata cat gct tgc	ttg gca aga ctg ctg	aaa gaa ctt aaa gga		2114
Gly Met Ile His Ala Cys	Leu Ala Arg Leu Leu	Lys Glu Leu Lys Gly		
603	608	613	618	
aga att act cta act att	gtt tct tgg cct ggc	act ttt tta tag aat		2162
Arg Ile Thr Leu Thr Ile	Val Ser Trp Pro Gly	Thr Phe Leu *		
619	624	629		
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atztatcttg tcagttttta tatttaaaga aagaatacat tgtaaaaatg tcaggaaaag				2282
tatgatcatc taatgaaagc cagttacacc tcagaaaata tgattccaaa aaaattaaaa				2342
ctactagttt tttttcagtg tggaggattt ctcattactc tacaacattg tttatatattt				2402
ttctattcaa taaaaagccc taaaacaact aaaatgattt gtatacccca ctgaattcaa				2462
gctgatttaa qtttaaaatt tggtatatgc tgaagtctgc caagggtaca ttatggccat				2522
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cgctgcgcc  cgcacccgca ctccaaatta gaaaggggac gtctagtggg ttgcccgga      180
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aactggatga tgattcagtt atagaaggag taagcgacca agtacttgtg gcagttgtgg     360
tcagtttcgc tttgattgct accctggtat atgcactttt cagaaatgta catcaaaaca     420
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atg cac ctg ctg cca ctc gac agc agt tct aca ctg aca tgt act gtc      528
Met His Leu Leu Pro Leu Asp Ser Ser Ser Thr Leu Thr Cys Thr Val
   1             5             10             15

cca tct gcc tgc acc aag cct cct tcc cgg tgg aga cca act gtg gac      576
Pro Ser Ala Cys Thr Lys Pro Pro Ser Arg Trp Arg Pro Thr Val Asp
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Ile Phe Phe Val Val Thr Leu Leu Leu Thr Val Phe Gly Glu Asp Asp
  33             38             43             48

cag tct cag gat gtt ctg aga ttg cat cag gat att aat gat tat aac      672
Gln Ser Gln Asp Val Leu Arg Leu His Gln Asp Ile Asn Asp Tyr Asn
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cgg aga ttc tca ggg caa ccc aga tct att atg gag aga att atg gat      720
Arg Arg Phe Ser Gly Gln Pro Arg Ser Ile Met Glu Arg Ile Met Asp
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cta ccc act tta ctg agg cat gca ttc agg gaa atg ttt tca gtc ggg      768
Leu Pro Thr Leu Leu Arg His Ala Phe Arg Glu Met Phe Ser Val Gly
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Gly Leu Phe Trp Met Phe Arg Ile Arg Ile Ile Leu Cys Leu Met Gly
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113 118 123 128

ttt gga att cta ggc ttt cta gat gat ttc ttt gtc atc ttt tta ttg 912  
Phe Gly Ile Leu Gly Phe Leu Asp Asp Phe Phe Val Ile Phe Leu Leu  
129 134 139 144

ctt atc tac atc tct att atg tat cga gaa gtg ata acc caa agg cta 960  
Leu Ile Tyr Ile Ser Ile Met Tyr Arg Glu Val Ile Thr Gln Arg Leu  
145 150 155 160

act aga tga aaaagaa aacaaaactg agtttactag gatattctgag ctaatgtaga 1016  
Thr Arg \*  
161

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ctggaatttt catgtttgaa gttctaatat taagttttaga attataatga tctacagttg 1196

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atatttttct tttcccaga attacttaga ttaattagat gtatagtaaa atattgttaa 1316

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1 5

agt gag gaa gaa gat gaa atg gaa gtt gaa gac cag gat agt aaa gaa 160  
Ser Glu Glu Glu Asp Glu Met Glu Val Glu Asp Gln Asp Ser Lys Glu  
12 17 22 27

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Ala Lys Lys Pro Asn Ile Ile Asn Phe Asp Thr Ser Leu Pro Thr Ser  
28 33 38 43

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His	Thr	Tyr	Leu	Gly	Ala	Asp	Met	Glu	Glu	Phe	His	Gly	Arg	Thr	Leu	
44					49					54					59	
cac	gat	gac	gac	agc	tgt	cag	gtg	att	cca	gtt	ctt	cca	caa	gtg	atg	304
His	Asp	Asp	Asp	Ser	Cys	Gln	Val	Ile	Pro	Val	Leu	Pro	Gln	Val	Met	
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atg	atc	ctg	att	ccc	gga	cag	aca	tta	cct	ctt	cag	ctt	ttt	cac	cct	352
Met	Ile	Leu	Ile	Pro	Gly	Gln	Thr	Leu	Pro	Leu	Gln	Leu	Phe	His	Pro	
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caa	gaa	gtc	agt	atg	gtg	cgg	aat	tta	att	cag	aaa	gat	aga	acc	ttt	400
Gln	Glu	Val	Ser	Met	Val	Arg	Asn	Leu	Ile	Gln	Lys	Asp	Arg	Thr	Phe	
92					97					102					107	
gct	gtt	ctt	gca	tac	agc	aat	gta	cag	gaa	agg	gaa	gca	cag	ttt	gga	448
Ala	Val	Leu	Ala	Tyr	Ser	Asn	Val	Gln	Glu	Arg	Glu	Ala	Gln	Phe	Gly	
108					113					118					123	
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Thr	Thr	Ala	Glu	Ile	Tyr	Ala	Tyr	Arg	Glu	Glu	Gln	Asp	Phe	Gly	Ile	
124					129					134					139	
gag	ata	gtg	aaa	gtg	aaa	gca	att	gga	aga	caa	agg	ttc	aaa	gtc	ctt	544
Glu	Ile	Val	Lys	Val	Lys	Ala	Ile	Gly	Arg	Gln	Arg	Phe	Lys	Val	Leu	
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gag	cta	aga	aca	cag	tca	gat	gga	atc	cag	caa	gct	aaa	gtg	caa	att	592
Glu	Leu	Arg	Thr	Gln	Ser	Asp	Gly	Ile	Gln	Gln	Ala	Lys	Val	Gln	Ile	
156					161					166					171	
ctt	ccc	gaa	tgt	gtg	ttg	cct	tca	acc	atg	tct	gca	gtt	caa	tta	gaa	640
Leu	Pro	Glu	Cys	Val	Leu	Pro	Ser	Thr	Met	Ser	Ala	Val	Gln	Leu	Glu	
172					177					182					187	
tcc	ctc	aat	aag	tgc	cag	ata	ttt	cct	tca	aaa	cct	gtc	tca	aga	gaa	688
Ser	Leu	Asn	Lys	Cys	Gln	Ile	Phe	Pro	Ser	Lys	Pro	Val	Ser	Arg	Glu	
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gac	caa	tgt	tca	tat	aaa	tgg	tgg	cag	aaa	tac	cag	aag	aga	aag	ttt	736
Asp	Gln	Cys	Ser	Tyr	Lys	Trp	Trp	Gln	Lys	Tyr	Gln	Lys	Arg	Lys	Phe	
204					209					214					219	
cat	tgt	gca	aat	cta	act	tca	tgg	cct	cgc	tgg	ctg	tat	tcc	tta	tat	784
His	Cys	Ala	Asn	Leu	Thr	Ser	Trp	Pro	Arg	Trp	Leu	Tyr	Ser	Leu	Tyr	
220					225					230					235	
gat	gct	gag	acc	tta	atg	gac	aga	atc	aag	aaa	cag	cta	cgt	gaa	tgg	832
Asp	Ala	Glu	Thr	Leu	Met	Asp	Arg	Ile	Lys	Lys	Gln	Leu	Arg	Glu	Trp	
236					241					246					251	
gat	gaa	aat	cta	aaa	gat	gat	tct	ctt	cct	tca	aat	cca	ata	gat	ttt	880
Asp	Glu	Asn	Leu	Lys	Asp	Asp	Ser	Leu	Pro	Ser	Asn	Pro	Ile	Asp	Phe	
252					257					262					267	

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aca gaa ata aca acc aaa aat gaa ata ttc agt tta tcc tta tgt ggg Thr Glu Ile Thr Thr Lys Asn Glu Ile Phe Ser Leu Ser Leu Cys Gly 316 321 326 331	1072
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cgccggtcac cggctcctgc agggtgcaaa tatatacaga gcttcataat cagcccaaga	240
ccacatagag caaac atg aat gat att tcc caa aag gct gag att aaa gaa	291
Met Asn Asp Ile Ser Gln Lys Ala Glu Ile Lys Glu	
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Met Leu Ala Ser Asp Asp Glu Glu Asp Val Ser Ser Lys Val Glu Lys	
13 18 23 28	
gct tat gtt cca aaa tta aca gga act gtg aag ggt aga ttt gct gaa	387
Ala Tyr Val Pro Lys Leu Thr Gly Thr Val Lys Gly Arg Phe Ala Glu	
29 34 39 44	
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Met Glu Lys Gln Arg Gln Glu Glu Gln Arg Lys Arg Thr Glu Glu Glu	
45 50 55 60	
cga aaa cgc aga att gag cag gat atg tta gaa aag agg aaa ata cag	483
Arg Lys Arg Arg Ile Glu Gln Asp Met Leu Glu Lys Arg Lys Ile Gln	
61 66 71 76	
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Arg Glu Leu Ala Lys Arg Ala Glu Gln Ile Glu Asp Ile Asn Asn Thr	
77 82 87 92	
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93 98 103 108	
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Val Val Pro Val Lys Ser Tyr Lys Thr Ser Gly Lys Met Lys Lys Asn	
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Phe Glu Asp Leu Glu Lys Glu Arg Glu Glu Lys Glu Arg Ile Lys Tyr	
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Glu Glu Asp Lys Arg Ile Arg Tyr Glu Glu Gln Arg Pro Ser Leu Lys	
141 146 151 156	
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Glu Ala Lys Cys Leu Ser Leu Val Met Asp Asp Glu Ile Glu Ser Glu	
157 162 167 172	
gca aaa aaa gaa tca ctt tct ccc gga aaa ttg aaa cta act ttt gaa	819
Ala Lys Lys Glu Ser Leu Ser Pro Gly Lys Leu Lys Leu Thr Phe Glu	
173 178 183 188	
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Glu Leu Glu Arg Gln Arg Gln Glu Asn Arg Lys Lys Gln Ala Glu Glu	
189 194 199 204	
gaa gca aga aaa cgt tta gaa gaa gag aag cgt gct ttt gaa gaa gca	915
Glu Ala Arg Lys Arg Leu Glu Glu Glu Lys Arg Ala Phe Glu Glu Ala	
205 210 215 220	
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221 226 231 236	
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253 258 263 268	
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Ala Arg Arg Arg Ile Glu Glu Glu Lys Lys Ala Phe Ala Glu Ala Arg	
269 274 279 284	
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Ser Gln Glu Phe Leu Thr Pro Gly Lys Leu Glu Ile Asn Phe Glu Glu	

301	306	311	316	
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Leu Leu Lys Gln Lys Met Glu Glu Glu Lys Arg Arg Thr Glu Glu Glu				
317	322	327	332	
cgg aag cat aag cta gaa atg gag aaa caa gaa ttt gaa caa ctg aga				1299
Arg Lys His Lys Leu Glu Met Glu Lys Gln Glu Phe Glu Gln Leu Arg				
333	338	343	348	
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Gln Glu Met Gly Glu Glu Glu Glu Glu Asn Glu Thr Phe Gly Leu Ser				
349	354	359	364	
aga gaa tat gaa gaa ctg atc aaa tta aaa agg agt ggc tct att caa				1395
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Lys Glu Ile Gln Lys Lys Ile Glu Glu Glu Arg Ala Arg Arg Arg Ala				
397	402	407	412	
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Ile Asp Leu Glu Ile Lys Glu Arg Glu Ala Glu Asn Phe His Glu Glu				
413	418	423	428	
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Asp Asp Val Asp Val Arg Pro Ala Arg Lys Ser Glu Ala Pro Phe Thr				
429	434	439	444	
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His Lys Val Asn Met Lys Ala Arg Phe Glu Gln Met Ala Lys Ala Arg				
445	450	455	460	
gaa gaa gaa gaa caa aga aga att gaa gaa caa aag tta cta cgc atg				1683
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461	466	471	476	
cag ttt gaa caa agg gaa att gat gca gca cta caa aag aaa aga gaa				1731
Gln Phe Glu Gln Arg Glu Ile Asp Ala Ala Leu Gln Lys Lys Arg Glu				
477	482	487	492	
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Glu Glu Glu Glu Glu Glu Gly Ser Ile Met Asn Gly Ser Thr Ala Glu				
493	498	503	508	
gat gaa gag caa acc aga tca gga gct cca tgg ttc aag aag cct ctt				1827
Asp Glu Glu Gln Thr Arg Ser Gly Ala Pro Trp Phe Lys Lys Pro Leu				
509	514	519	524	
/aaa aac aca tca gtt gta gac agt gag cca gtc aga ttt acg gtt aaa				1875
Lys Asn Thr Ser Val Val Asp Ser Glu Pro Val Arg Phe Thr Val Lys				
525	530	535	540	

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Val Thr Gly Glu Pro Lys Pro Glu Ile Thr Trp Trp Phe Glu Gly Glu	
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Ile Leu Gln Asp Gly Glu Asp Tyr Gln Tyr Ile Glu Arg Gly Glu Thr	
557 562 567 572	
tac tgc ctt tac tta cca gaa act ttc cca gaa gat gga gga gag tat	2019
Tyr Cys Leu Tyr Leu Pro Glu Thr Phe Pro Glu Asp Gly Gly Glu Tyr	
573 578 583 588	
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589 594 599 604	
ctt acc att gaa agt aag aat taa tcaactctttt tatcttttat tctattaatt	2121
Leu Thr Ile Glu Ser Lys Asn *	
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catggaccag ctattcaaat agaagaacta ttcaaagaat tggggaaaac agccattgaa	240
gattcgattc agacatctaa gatgggaaag cccagtaaaa atgctcctaa agaccaaact	300

gtgtctcaaa aggaacgtag agaaacttca aagcaaaaac aaaagggtaa agagaaccca	360
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gagctcatag aagataaaat agattataca aaggaaaggc aaccatccat agacctgaca	480
tgtgtatcat atccatttga tgaattcagt aatccatatac gttacaagtt ggattttagt	540
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Lys Ile Arg Trp Trp Ile Glu Glu Asn Gly Gly Asn Gly Asn Ile Ser	
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Lys Glu Arg Leu Tyr Pro Lys Ser Lys Arg Arg Tyr Asp Thr Tyr Asn	
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Tyr Phe Val Leu Leu Lys Pro Arg Asn Asn Ile Lys Gln Asn Glu Glu	
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Ile Phe Cys Leu Leu Glu Glu Ser Gln Asn Asn Thr Gly Leu Gly Ser	
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187 192 197 202	
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Thr Gly Met Leu Val Val Ala Phe Gly Leu Leu Val Leu Tyr Ile Leu	
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 Cys Gly Val Cys Pro Arg Gly Gln Arg Thr Asn Ala Gln Lys Tyr Cys  
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 Gln Pro Cys Thr Glu Ser Pro Glu Leu Tyr Asp Trp Leu Tyr Leu Gly  
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 Phe Met Ala Met Leu Pro Leu Val Leu His Trp Phe Phe Ile Glu Trp  
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 Tyr Ser Gly Lys Lys Ser Ser Ser Ala Leu Phe Gln His Ile Thr Ala  
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Val Leu Ser Leu Val Thr Leu Ala Val Tyr Met Ser Ala Ser Glu Ile	
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Glu Asn Cys Tyr Asp Leu Leu Val Arg Lys Lys Arg Leu Ile Val Leu	
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Phe Ser His Trp Leu Leu His Ala Tyr Gly Ile Ile Ser Ile Ser Arg	
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Pro Ala Leu Phe Tyr Leu Phe Thr Ala Lys Phe Thr Glu Pro Ser Arg	
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297 302	
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1650

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Met Leu Asp Asn Leu Ala Val His Pro Glu Gln

1 5

ctt cct ccg agg cca tgg att aca tta aaa gaa cga gac caa att ctg 218  
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12 17 22 27

ccg tca gca tca ttc acg gtt atg tgt tac aat gtg tta tgt gat aaa 266  
Pro Ser Ala Ser Phe Thr Val Met Cys Tyr Asn Val Leu Cys Asp Lys  
28 33 38 43

tac gct acc ccg cag cta tat ggc tat tgc cca tcc tgg gca tta aac 314  
Tyr Ala Thr Arg Gln Leu Tyr Gly Tyr Cys Pro Ser Trp Ala Leu Asn  
44 49 54 59

tgg gaa tac agg aaa aag gga att atg gaa gaa att gtt aac tgt gac 362  
Trp Glu Tyr Arg Lys Lys Gly Ile Met Glu Glu Ile Val Asn Cys Asp  
60 65 70 75

gca gat atc att agt ctt cag gaa gtg gaa aca gag caa tac ttc act 410  
Ala Asp Ile Ile Ser Leu Gln Glu Val Glu Thr Glu Gln Tyr Phe Thr  
76 81 86 91

ctc ttt ctg cca gca ttg aag gag cgt gga tat gat gga ttt ttt tct 458  
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92 97 102 107

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Pro Lys Ser Arg Ala Lys Ile Met Ser Glu Gln Glu Arg Lys His Val  
108 113 118 123

gat ggt tgt gca ata ttc ttc aaa aca gaa aaa ttt aca ttg gtg cag 554  
Asp Gly Cys Ala Ile Phe Phe Lys Thr Glu Lys Phe Thr Leu Val Gln  
124 129 134 139

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Lys His Thr Val Glu Phe Asn Gln Val Ala Met Ala Asn Ser Asp Gly

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Ser Glu Ala Met Leu Asn Arg Val Met Thr Lys Asp Asn Ile Gly Val				
156	161	166	171	
gct gtg gta tta gag gtc cac aaa gaa cta ttt gga gca ggt atg aag				698
Ala Val Val Leu Glu Val His Lys Glu Leu Phe Gly Ala Gly Met Lys				
172	177	182	187	
cct att cat gct gca gac aaa cag ctg ctt ata gtg gca aat gcc cac				746
Pro Ile His Ala Ala Asp Lys Gln Leu Leu Ile Val Ala Asn Ala His				
188	193	198	203	
atg cat tgg gac cca gag tat tct gat gtg aag ctc atc cag acc atg				794
Met His Trp Asp Pro Glu Tyr Ser Asp Val Lys Leu Ile Gln Thr Met				
204	209	214	219	
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Met Phe Val Ser Glu Val Lys Asn Ile Leu Glu Lys Ala Ser Ser Arg				
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Pro Gly Ser Pro Thr Ala Asp Pro Asn Ser Ile Pro Leu Val Leu Cys				
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gca gat ctt aac tca ttg cca gat tca ggt gtt gtg gaa tac tta agc				938
Ala Asp Leu Asn Ser Leu Pro Asp Ser Gly Val Val Glu Tyr Leu Ser				
252	257	262	267	
aat gga gga gta gct gac aac cat aaa gac ttc aag gaa cta agg tac				986
Asn Gly Gly Val Ala Asp Asn His Lys Asp Phe Lys Glu Leu Arg Tyr				
268	273	278	283	
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Asn Glu Cys Leu Met Asn Phe Ser Cys Asn Gly Lys Asn Gly Ser Ser				
284	289	294	299	
gaa ggg aga atc aca cat ggc ttc caa ctt aag agc gcc tat gaa aat				1082
Glu Gly Arg Ile Thr His Gly Phe Gln Leu Lys Ser Ala Tyr Glu Asn				
300	305	310	315	
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Asn Leu Met Pro Tyr Thr Asn Tyr Thr Phe Asp Phe Lys Gly Val Ile				
316	321	326	331	
gac tac att ttc tat tcc aag act cat atg aac gtg ctt ggt gtc ctg				1178
Asp Tyr Ile Phe Tyr Ser Lys Thr His Met Asn Val Leu Gly Val Leu				
332	337	342	347	
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Gly Pro Leu Asp Pro Gln Trp Leu Val Glu Asn Asn Ile Thr Gly Cys				
348	353	358	363	
cca cac cct cac atc cct tca gac cac ttc tca ctg tta aca caa ctt				1274
Pro His Pro His Ile Pro Ser Asp His Phe Ser Leu Leu Thr Gln Leu				
364	369	374	379	



Thr	Glu	Ile	Asp	Cys	Gly	Thr	Pro	Pro	Glu	Val	Pro	Asp	Gly	Tyr	Ile
23					28					33					38

ata	gga	aat	tat	acg	tct	agt	ctg	ggc	agc	cag	gtt	cgt	tat	gct	tgc	796
Ile	Gly	Asn	Tyr	Thr	Ser	Ser	Leu	Gly	Ser	Gln	Val	Arg	Tyr	Ala	Cys	
39					44					49					54	

aga	gaa	gga	ttc	ttc	agt	gtt	cca	gaa	gat	aca	gtt	tca	agc	tgc	aca	844
Arg	Glu	Gly	Phe	Phe	Ser	Val	Pro	Glu	Asp	Thr	Val	Ser	Ser	Cys	Thr	
55					60					65					70	

ggc	ctg	ggc	aca	tgg	gag	tcc	cca	aaa	tta	cat	tgc	caa	gag	atc	aac	892
Gly	Leu	Gly	Thr	Trp	Glu	Ser	Pro	Lys	Leu	His	Cys	Gln	Glu	Ile	Asn	
71					76					81					86	

tgt	ggc	aac	cct	cca	gaa	atg	cgg	cac	gcc	atc	ttg	gta	gga	aat	cac	940
Cys	Gly	Asn	Pro	Pro	Glu	Met	Arg	His	Ala	Ile	Leu	Val	Gly	Asn	His	
87					92					97					102	

agc	tcc	agg	ctg	ggc	ggt	gtg	gct	cgc	tat	gtc	tgt	caa	gag	ggc	ttt	988
Ser	Ser	Arg	Leu	Gly	Gly	Val	Ala	Arg	Tyr	Val	Cys	Gln	Glu	Gly	Phe	
103					108					113					118	

gag	agc	cct	gga	gga	aag	atc	act	tct	gtt	tgc	aca	gag	aaa	ggc	acc	1036
Glu	Ser	Pro	Gly	Gly	Lys	Ile	Thr	Ser	Val	Cys	Thr	Glu	Lys	Gly	Thr	
119					124					129					134	

tgg	aga	gaa	agt	act	tta	aca	tgc	aca	gaa	att	ctg	aca	aag	att	aat	1084
Trp	Arg	Glu	Ser	Thr	Leu	Thr	Cys	Thr	Glu	Ile	Leu	Thr	Lys	Ile	Asn	
135					140					145					150	

gat	gta	tca	ctg	ttt	aat	gat	acc	tgt	gtg	aga	tgg	caa	ata	aac	tca	1132
Asp	Val	Ser	Leu	Phe	Asn	Asp	Thr	Cys	Val	Arg	Trp	Gln	Ile	Asn	Ser	
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aga	aga	ata	aac	ccc	aag	atc	tca	tat	gtg	ata	tcc	ata	aaa	gga	caa	1180
Arg	Arg	Ile	Asn	Pro	Lys	Ile	Ser	Tyr	Val	Ile	Ser	Ile	Lys	Gly	Gln	
167					172					177					182	

cgg	ttg	gac	cct	atg	gaa	tca	gtt	cgt	gag	gag	aca	gtc	aac	ttg	acc	1228
Arg	Leu	Asp	Pro	Met	Glu	Ser	Val	Arg	Glu	Glu	Thr	Val	Asn	Leu	Thr	
183					188					193					198	

aca	gac	agc	agg	acc	cca	gaa	gtg	tgc	cta	gcc	ctg	tac	cca	ggc	acc	1276
Thr	Asp	Ser	Arg	Thr	Pro	Glu	Val	Cys	Leu	Ala	Leu	Tyr	Pro	Gly	Thr	
199					204					209					214	

aac	tac	acc	gtg	aac	atc	tcc	aca	gca	cct	ccc	agg	cgc	tcg	atg	cca	1324
Asn	Tyr	Thr	Val	Asn	Ile	Ser	Thr	Ala	Pro	Pro	Arg	Arg	Ser	Met	Pro	
215					220					225					230	

gcc	gtc	atc	ggt	ttc	cag	aca	gct	gaa	gtt	gat	ctc	tta	gaa	gat	gat	1372
Ala	Val	Ile	Gly	Phe	Gln	Thr	Ala	Glu	Val	Asp	Leu	Leu	Glu	Asp	Asp	
231					236					241					246	

gga	agt	ttc	aat	att	tca	ata	ttt	aat	gaa	act	tgt	ttg	aaa	ttg	aac	1420
Gly	Ser	Phe	Asn	Ile	Ser	Ile	Phe	Asn	Glu	Thr	Cys	Leu	Lys	Leu	Asn	

247	252	257	262	
agg cgt tct agg aaa gtt gga tca gaa cac atg tac caa ttt acc gtt				1468
Arg Arg Ser Arg Lys Val Gly Ser Glu His Met Tyr Gln Phe Thr Val				
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ctg ggt cag agg tgg tat ctg gct aac ttt tct cat gca aca tcg ttt				1516
Leu Gly Gln Arg Trp Tyr Leu Ala Asn Phe Ser His Ala Thr Ser Phe.				
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aac ttc aca acg agg gaa caa gtg cct gta gtg tgt ttg gat ctg tac				1564
Asn Phe Thr Thr Arg Glu Gln Val Pro Val Val Cys Leu Asp Leu Tyr				
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cct acg act gat tat acg gtg aat gtg acc ctg ctg aga tct cct aag				1612
Pro Thr Thr Asp Tyr Thr Val Asn Val Thr Leu Leu Arg Ser Pro Lys				
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cgg cac tca gtg caa ata aca ata gca act ccc cca gca gta aaa cag				1660
Arg His Ser Val Gln Ile Thr Ile Ala Thr Pro Pro Ala Val Lys Gln				
327	332	337	342	
acc atc agt aac att tca gga ttt aat gaa acc tgc ttg aga tgg aga				1708
Thr Ile Ser Asn Ile Ser Gly Phe Asn Glu Thr Cys Leu Arg Trp Arg				
343	348	353	358	
agc atc aag aca gct gat atg gag gag atg tat tta ttc cac att tgg				1756
Ser Ile Lys Thr Ala Asp Met Glu Glu Met Tyr Leu Phe His Ile Trp				
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ggc cag aga tgg tat cag aag gaa ttt gcc cag gaa atg acc ttt aat				1804
Gly Gln Arg Trp Tyr Gln Lys Glu Phe Ala Gln Glu Met Thr Phe Asn				
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Ile Ser Ser Ser Ser Arg Asp Pro Glu Val Cys Leu Asp Leu Arg Pro				
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Gly Thr Asn Tyr Asn Val Ser Leu Arg Ala Leu Ser Ser Glu Leu Pro				
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gtg gtc atc tcc ctg aca acc cag ata aca gag cct ccc ctc ccg gaa				1948
Val Val Ile Ser Leu Thr Thr Gln Ile Thr Glu Pro Pro Leu Pro Glu				
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Val Glu Phe Phe Thr Val His Arg Gly Pro Leu Pro Arg Leu Arg Leu				
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Arg Lys Ala Lys Glu Lys Asn Gly Pro Ile Ser Ser Tyr Gln Val Leu				
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gtg ctt ccc ctg gcc ctc caa agc aca ttt tct tgt gat tct gaa ggc				2092
Val Leu Pro Leu Ala Leu Gln Ser Thr Phe Ser Cys Asp Ser Glu Gly				
471	476	481	486	



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Ala Ser Ser Phe Phe Ser Asn Ala Ser Asp Ala Asp Gly Tyr Val Ala	
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Ala Glu Leu Leu Ala Lys Asp Val Pro Asp Asp Ala Met Glu Ile Pro	
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Ile Gly Asp Arg Leu Tyr Tyr Gly Glu Tyr Tyr Asn Ala Pro Leu Lys	
519 524 529 534	
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Arg Gly Ser Asp Tyr Cys Ile Ile Leu Arg Ile Thr Ser Glu Trp Asn	
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Lys Val Arg Arg His Ser Cys Ala Val Trp Ala Gln Val Lys Asp Ser	
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Ser Leu Met Leu Leu Gln Met Ala Gly Val Gly Leu Gly Ser Leu Ala	
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gtt gtg atc att ctc aca ttc ctc tcc ttc tca gcg gtg tga tggcaga	2429
Val Val Ile Ile Leu Thr Phe Leu Ser Phe Ser Ala Val *	
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Pro Leu Phe Glu Ala Glu Glu Gly Val Leu Ser Arg Thr Gln Ile Phe		
2 7 12 17		
cct acc act att aaa gtc att gat cca gaa ttt ctg gag gag cca cct		151
Pro Thr Thr Ile Lys Val Ile Asp Pro Glu Phe Leu Glu Glu Pro Pro		
18 23 28 33		
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Ala Leu Ala Phe Leu Tyr Lys Asp Leu Tyr Glu Glu Ala Val Gly Glu		
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Lys Lys Lys Glu Glu Glu Thr Ala Ser Glu Gly Asp Ser Val Asn Ser		
50 55 60 65		
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Glu Ala Ser Phe Pro Ser Arg Asn Ser Asp Thr Asp Asp Gly Thr Gly		
66 71 76 81		
ata tat ttt gag aag tac ata ctc aaa gat gac att ctc cat gac aca		343
Ile Tyr Phe Glu Lys Tyr Ile Leu Lys Asp Asp Ile Leu His Asp Thr		
82 87 92 97		
tct cta act caa aag gac cag ggc caa ggt ctg gaa gaa aaa cga gtt		391
Ser Leu Thr Gln Lys Asp Gln Gly Gln Gly Leu Glu Glu Lys Arg Val		
98 103 108 113		
ggt aag gat gat tca tac caa ccg ata gct gca gaa ggg gaa att tgg		439
Gly Lys Asp Asp Ser Tyr Gln Pro Ile Ala Ala Glu Gly Glu Ile Trp		
114 119 124 129		
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Gly Lys Phe Gly Thr Ile Cys Arg Glu Lys Ser Leu Glu Glu Gln Lys		
130 135 140 145		
ggt gtt tat ggg gaa gga gaa tca gta gac cat gtg gag acc gtt ggt		535
Gly Val Tyr Gly Glu Gly Glu Ser Val Asp His Val Glu Thr Val Gly		
146 151 156 161		
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162 167 172 177		
gct acc cag aaa ata agt tat gcg gtt cca ttt gaa gac acc cat cat		631
Ala Thr Gln Lys Ile Ser Tyr Ala Val Pro Phe Glu Asp Thr His His		
178 183 188 193		
gtt ctg gag cgt gca gat gaa gca ggc agt cac ggt aat gaa gtc gga		679
Val Leu Glu Arg Ala Asp Glu Ala Gly Ser His Gly Asn Glu Val Gly		
194 199 204 209		

aat gca agt cca gag gtc aat ctg aat gtc cca gta caa gtg tcc ttc	727
Asn Ala Ser Pro Glu Val Asn Leu Asn Val Pro Val Gln Val Ser Phe	
210 215 220 225	
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Pro Glu Glu Glu Phe Ala Ser Gly Ala Thr His Val Gln Glu Thr Ser	
226 231 236 241	
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Leu Glu Glu Pro Lys Ile Leu Val Pro Pro Glu Pro Ser Glu Glu Arg	
242 247 252 257	
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Leu Arg Asn Ser Pro Val Gln Asp Glu Tyr Glu Phe Thr Glu Ser Leu	
258 263 268 273	
cat aat gaa gtg gtt cct caa gac ata tta tca gaa gaa ctg tct tca	919
His Asn Glu Val Val Pro Gln Asp Ile Leu Ser Glu Glu Leu Ser Ser	
274 279 284 289	
gaa tcc aca cct gaa gat gtc tta tct caa gga aag gaa tcc ttt gag	967
Glu Ser Thr Pro Glu Asp Val Leu Ser Gln Gly Lys Glu Ser Phe Glu	
290 295 300 305	
cac atc agt gaa aat gaa ttt gcg agt gag gca gaa caa agt aca cct	1015
His Ile Ser Glu Asn Glu Phe Ala Ser Glu Ala Glu Gln Ser Thr Pro	
306 311 316 321	
gct gaa caa aaa gag ttg ggc agc gag agg aaa gaa gaa gac caa tta	1063
Ala Glu Gln Lys Glu Leu Gly Ser Glu Arg Lys Glu Glu Asp Gln Leu	
322 327 332 337	
tca tct gag gta gta act gaa aag gca caa aaa gag ctg aaa aag tcc	1111
Ser Ser Glu Val Val Thr Glu Lys Ala Gln Lys Glu Leu Lys Lys Ser	
338 343 348 353	
cag att gac aca tac tgt tac acc tgc aaa tgt cca att tct gcc act	1159
Gln Ile Asp Thr Tyr Cys Tyr Thr Cys Lys Cys Pro Ile Ser Ala Thr	
354 359 364 369	
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Asp Lys Val Phe Gly Thr His Lys Asp His Glu Val Ser Thr Leu Asp	
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Thr Ala Ile Ser Ala Val Lys Val Gln Leu Ala Glu Phe Leu Glu Asn	
386 391 396 401	
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Leu Gln Glu Lys Ser Leu Arg Ile Glu Ala Phe Val Ser Glu Ile Glu	
402 407 412 417	
tcc ttt ttt aat acc att gag gaa aac tgt agt aaa aat gag aaa agg	1351
Ser Phe Phe Asn Thr Ile Glu Glu Asn Cys Ser Lys Asn Glu Lys Arg	
418 423 428 433	
cta gaa gaa cag aat gag gaa atg atg aag aag gtt tta gca cag tat	1399

Leu Glu Glu Gln Asn Glu Glu Met Met Lys Lys Val Leu Ala Gln Tyr	
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Asp Glu Lys Ala Gln Ser Phe Glu Glu Val Lys Lys Lys Lys Met Glu	
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ttc ctg cat gag cag atg gtc cac ttt ctg cag agc atg gac act gcc	1495
Phe Leu His Glu Gln Met Val His Phe Leu Gln Ser Met Asp Thr Ala	
466 471 476 481	
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Lys Asp Thr Leu Glu Thr Ile Val Arg Glu Ala Glu Glu Leu Asp Glu	
482 487 492 497	
gcc gtc ttc ctg act tgc ttt gag gaa atc aat gaa agg ttg ctt tct	1591
Ala Val Phe Leu Thr Ser Phe Glu Glu Ile Asn Glu Arg Leu Leu Ser	
498 503 508 513	
gca atg gag agc act gct tct tta gag aaa atg cct gct gcg ttt tcc	1639
Ala Met Glu Ser Thr Ala Ser Leu Glu Lys Met Pro Ala Ala Phe Ser	
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Leu Phe Glu His Tyr Asp Asp Ser Ser Ala Arg Ser Asp Gln Met Leu	
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Lys Gln Val Ala Val Pro Gln Pro Pro Arg Leu Glu Pro Gln Glu Pro	
546 551 556 561	
aat tct gcc acc agc aca aca att gca gtt tac tgg agc atg aac aag	1783
Asn Ser Ala Thr Ser Thr Thr Ile Ala Val Tyr Trp Ser Met Asn Lys	
562 567 572 577	
gaa gat gtc att gat tca ttt cag gtt tac tgc atg gag gag cca caa	1831
Glu Asp Val Ile Asp Ser Phe Gln Val Tyr Cys Met Glu Glu Pro Gln	
578 583 588 593	
gat gat caa gaa gta aat gag ttg gta gaa gaa tac aga ctg aca gtg	1879
Asp Asp Gln Glu Val Asn Glu Leu Val Glu Glu Tyr Arg Leu Thr Val	
594 599 604 609	
aaa gaa agc tac tgc att ttt gaa gat ctg gaa cct gac cga tgc tat	1927
Lys Glu Ser Tyr Cys Ile Phe Glu Asp Leu Glu Pro Asp Arg Cys Tyr	
610 615 620 625	
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Gln Val Trp Val Met Ala Val Asn Phe Thr Gly Cys Ser Leu Pro Ser	
626 631 636 641	
gaa agg gcc atc ttt agg aca gca ccc tcc acc cct gtg atc cgc gct	2023
Glu Arg Ala Ile Phe Arg Thr Ala Pro Ser Thr Pro Val Ile Arg Ala	
642 647 652 657	
gag gac tgt act gtg tgt tgg aac aca gcc act atc cga tgg cgg ccc	2071
Glu Asp Cys Thr Val Cys Trp Asn Thr Ala Thr Ile Arg Trp Arg Pro	

658	663	668	673	
acc acc cca gag gcc acg gag acc tac act ctg gag tac tgc aga cag				2119
Thr Thr Pro Glu Ala Thr Glu Thr Tyr Thr Leu Glu Tyr Cys Arg Gln				
674	679	684	689	
cac tct cct gag gga gag ggc ctc aga tct ttc tct gga atc aaa gga				2167
His Ser Pro Glu Gly Glu Gly Leu Arg Ser Phe Ser Gly Ile Lys Gly				
690	695	700	705	
ctc cag ctg aaa gtt aac ctc caa ccc aat gat aac tac ttt ttc tat				2215
Leu Gln Leu Lys Val Asn Leu Gln Pro Asn Asp Asn Tyr Phe Phe Tyr				
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gtg agg gcc atc aat gca ttt ggg aca agt gaa cag agt gaa gct gct				2263
Val Arg Ala Ile Asn Ala Phe Gly Thr Ser Glu Gln Ser Glu Ala Ala				
722	727	732	737	
ctc atc tcc acc aga gga acc aga ttt ctc ttg ttg aga gaa aca gct				2311
Leu Ile Ser Thr Arg Gly Thr Arg Phe Leu Leu Leu Arg Glu Thr Ala				
738	743	748	753	
cat cct gct cta cac att tcc tca agt ggg aca gtg atc agc ttt ggt				2359
His Pro Ala Leu His Ile Ser Ser Ser Gly Thr Val Ile Ser Phe Gly				
754	759	764	769	
gag agg aga cgg ctg acg gaa atc ccg tca gtg ctg ggt gag gag ctg				2407
Glu Arg Arg Arg Leu Thr Glu Ile Pro Ser Val Leu Gly Glu Glu Leu				
770	775	780	785	
cct tcc tgt ggc cag cat tac tgg gaa acc aca gtc aca gac tgc cca				2455
Pro Ser Cys Gly Gln His Tyr Trp Glu Thr Thr Val Thr Asp Cys Pro				
786	791	796	801	
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Ala Tyr Arg Leu Gly Ile Cys Ser Ser Ser Ala Val Gln Ala Gly Ala				
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cta gga caa ggg gag acc tca tgg tac atg cac tgc tct gag cca cag				2551
Leu Gly Gln Gly Glu Thr Ser Trp Tyr Met His Cys Ser Glu Pro Gln				
818	823	828	833	
aga tac aca ttt ttc tac agt ggt att gtg agt gat gtt cat gtg act				2599
Arg Tyr Thr Phe Phe Tyr Ser Gly Ile Val Ser Asp Val His Val Thr				
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Glu Arg Pro Ala Arg Val Gly Ile Leu Leu Asp Tyr Asn Asn Gln Arg				
850	855	860	865	
ctt atc ttc atc aac gca gag agc gag cag ttg ctc ttc atc atc agg				2695
Leu Ile Phe Ile Asn Ala Glu Ser Glu Gln Leu Leu Phe Ile Ile Arg				
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cac agg ttt aat gag ggt gtc cac cct gcc ttt gcc ctg gag aaa cct				2743
His Arg Phe Asn Glu Gly Val His Pro Ala Phe Ala Leu Glu Lys Pro				
882	887	892	897	

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 Gly Lys Cys Thr Leu His Leu Gly Ile Glu Pro Pro Asp Ser Val Arg  
 898 903 908 913

cac aag tga tccttgg ctttcagaat ttgcaagaac agcgatttga attttggggg 2847  
 His Lys \*  
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 Pro Leu Trp Trp Lys Thr Thr Glu Thr Tyr Arg Ala Ser Leu Pro Tyr  
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Lys Leu Pro Phe Thr Val Val His Glu Arg Glu Ile Pro Leu Lys Tyr	
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Asp His Glu Glu Glu Ala Leu Ser Ser Gly Ser Val Gln Glu Ala Glu	
113 118 123 128	
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Ala Met Leu Asp Glu Pro Gln Glu Gln Ala Glu Gly Ser Leu Thr Val	
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tac att ggg ccc aag agg aca gca gtg gtg cgg ggg ata atg cac cgg	528
Tyr Ile Gly Pro Lys Arg Thr Ala Val Val Arg Gly Ile Met His Arg	
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Pro Glu Asp Lys Trp Ser Ala Glu Lys Arg Arg Pro Leu Lys Ser Ser	
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Leu Gly Tyr Glu Ile Thr Phe Ser Leu Leu Asn Pro Asp Pro Lys Ser	
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His Asp Val Tyr Trp Asp Ile Glu Gly Ala Val Arg Arg Tyr Val Gln	
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Pro Phe Leu Asn Ala Leu Gly Ala Ala Gly Asn Phe Ser Val Asp Ser	
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Gln Ile Leu Tyr Tyr Ala Met Leu Gly Val Asn Pro Arg Phe Asp Ser	
273 278 283 288	

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Asn Pro Val Glu Ser Arg Leu Gly Ser Ser Ala Ala Ser Leu Tyr Pro	
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Val Leu Asn Phe Leu Leu Tyr Val Pro Glu Leu Ala His Ser Pro Leu	
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Tyr Ile Gln Asp Lys Asp Gly Ala Pro Val Ala Thr Asn Ala Phe His	
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Gln Pro Gln Leu Pro Pro Lys Cys Leu Leu Ser Gly Pro Thr Ser Glu	
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Gly Leu Met Thr Trp Glu Leu Asp Arg Leu Leu Trp Ala Arg Ser Val	
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Asp Ala Ser Leu Glu Lys Ile Ala Asp Pro Thr Leu Ala Glu Met Gly  
2 7 12 17

aaa aac ttg aag gag gca gtg aag atg ctg gag gac agt cag aga aga 272  
Lys Asn Leu Lys Glu Ala Val Lys Met Leu Glu Asp Ser Gln Arg Arg  
18 23 28 33

aca gaa gag gaa aat gga aag aag ctc ata tcc gga gat att cca ggc 320  
Thr Glu Glu Glu Asn Gly Lys Lys Leu Ile Ser Gly Asp Ile Pro Gly  
34 39 44 49

cca ctc cag ggc agt ggg caa gat atg gtg agc atc ctc cag tta gtt 368  
Pro Leu Gln Gly Ser Gly Gln Asp Met Val Ser Ile Leu Gln Leu Val  
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Gln Asn Leu Met His Gly Asp Glu Asp Glu Glu Pro Gln Ser Pro Arg  
66 71 76 81

atc caa aat att gga gaa caa ggt cat atg gct ttg ttg gga cat agt 464  
Ile Gln Asn Ile Gly Glu Gln Gly His Met Ala Leu Leu Gly His Ser  
82 87 92 97

ctg gga gct tat att tca act ctg gac aaa gag aag ctg aga aaa ctt	512
Leu Gly Ala Tyr Ile Ser Thr Leu Asp Lys Glu Lys Leu Arg Lys Leu	
98 103 108 113	
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Thr Thr Arg Ile Leu Ser Asp Thr Thr Leu Trp Leu Cys Arg Ile Phe	
114 119 124 129	
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Arg Tyr Glu Asn Gly Cys Ala Tyr Phe His Glu Glu Glu Arg Glu Gly	
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Leu Ala Lys Ile Cys Arg Leu Ala Ile His Ser Arg Tyr Glu Asp Phe	
146 151 156 161	
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Val Val Asp Gly Phe Asn Val Leu Tyr Asn Lys Lys Pro Val Ile Tyr	
162 167 172 177	
ctt agt gct gct gct aga cct ggc ctg ggc caa tac ctt tgt aat cag	752
Leu Ser Ala Ala Ala Arg Pro Gly Leu Gly Gln Tyr Leu Cys Asn Gln	
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Leu Gly Leu Pro Phe Pro Cys Leu Cys Arg Val Pro Cys Asn Thr Val	
194 199 204 209	
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Phe Gly Ser Gln His Gln Met Asp Val Ala Phe Leu Glu Lys Leu Ile	
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Lys Asp Asp Ile Glu Arg Gly Arg Leu Pro Leu Leu Leu Val Ala Asn	
226 231 236 241	
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Ala Gly Thr Ala Ala Val Gly His Thr Asp Lys Ile Gly Arg Leu Lys	
242 247 252 257	
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Glu Leu Cys Glu Gln Tyr Gly Ile Trp Leu His Val Glu Gly Val Asn	
258 263 268 273	
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Leu Ala Thr Leu Ala Leu Gly Tyr Val Ser Ser Ser Val Leu Ala Ala	
274 279 284 289	
gcc aaa tgt gat agc atg acg atg act cct ggc ccg tgg ctg ggt ttg	1088
Ala Lys Cys Asp Ser Met Thr Met Thr Pro Gly Pro Trp Leu Gly Leu	
290 295 300 305	
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Pro Ala Val Pro Ala Val Thr Leu Tyr Lys His Asp Asp Pro Ala Leu	
306 311 316 321	
act tta gtt gct ggt ctt aca tca aat aag ccc aca gac aaa ctc cgt	1184

Thr Leu Val Ala Gly Leu Thr Ser Asn Lys Pro Thr Asp Lys Leu Arg  
322 327 332 337

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338 343 348 353

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354 359 364 369

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agc tcc cca gtg gtg gtg ttc aga ttt ttc cag gaa tta cca ggc tca 1376  
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402 407 412 417

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Val Gly Arg Glu Arg His Ser Cys Asp Ala Leu Asn Arg Trp Leu Gly  
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Ala Val Leu Gly Thr Arg Gly Glu Asp Val Asp Gln Leu Val Ala Cys  
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Ile Glu Ser Lys Leu Pro Val Leu Cys Cys Thr Leu Gln Leu Arg Glu  
482 487 492 497

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498 503 508 513

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514 519 524 529

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Lys Ile Gly Pro Glu Tyr Lys Ser Met Lys Ser Cys Leu Tyr Val Gly				
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Met Ala Ser Asp Asn Val Asp Ala Ala Glu Leu Val Glu Thr Ile Ala				
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gcc aca gcc cgg gag ata gag gag aac tcg agg ctt ctg gaa aac atg				2000
Ala Thr Ala Arg Glu Ile Glu Glu Asn Ser Arg Leu Leu Glu Asn Met				
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aca gaa gtg gtt cgg aaa ggc att cag gaa gct caa gtg gag ctg cag				2048
Thr Glu Val Val Arg Lys Gly Ile Gln Glu Ala Gln Val Glu Leu Gln				
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Lys Ala Ser Glu Glu Arg Leu Leu Glu Glu Gly Val Leu Arg Gln Ile				
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Pro Val Val Gly Ser Val Leu Asn Trp Phe Ser Pro Val Gln Ala Leu				
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cag aag gga aga act ttt aac ttg aca gca ggc tct ctg gag tcc aca				2192
Gln Lys Gly Arg Thr Phe Asn Leu Thr Ala Gly Ser Leu Glu Ser Thr				
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gaa ccc ata tat gtc tac aaa gca caa ggt gca gga gtc acg ctg cct				2240
Glu Pro Ile Tyr Val Tyr Lys Ala Gln Gly Ala Gly Val Thr Leu Pro				
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cca acg ccc tcg ggc agt cgc acc aag cag agg ctt cca ggc cag aag				2288
Pro Thr Pro Ser Gly Ser Arg Thr Lys Gln Arg Leu Pro Gly Gln Lys				
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cct ttt aaa agg tcc ctg cga ggt tca gat gct ttg agt gag acc agc				2336
Pro Phe Lys Arg Ser Leu Arg Gly Ser Asp Ala Leu Ser Glu Thr Ser				
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tca gtc agt cac att gaa gac tta gaa aag gtg gag cgc cta tcc agt				2384
Ser Val Ser His Ile Glu Asp Leu Glu Lys Val Glu Arg Leu Ser Ser				
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ggg ccg gag cag atc acc ctc gag gcc agc agc act gag gga cac cca				2432
Gly Pro Glu Gln Ile Thr Leu Glu Ala Ser Ser Thr Glu Gly His Pro				
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Gly Ala Pro Ser Pro Gln His Thr Asp Gln Thr Glu Ala Phe Gln Lys				
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Gly Val Pro His Pro Glu Asp Asp His Ser Gln Val Glu Gly Pro Glu				
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 Ser Leu Arg \*  
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 Ala Asp Pro Gly Ser Arg Gly Leu Leu Arg Leu Leu Ser Phe Cys Val  
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 106 111 116 121

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 122 127 132 137

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Glu Asn Glu Thr Lys Val Ile Lys Gln Cys Tyr Gln Asp His Asn Leu				
186	191	196	201	
agt cag aat ggc tca gca cca acc ttc cca cta tgt gcc atg cag ctc				737
Ser Gln Asn Gly Ser Ala Pro Thr Phe Pro Leu Cys Ala Met Gln Leu				
202	207	212	217	
ttt tca cac atg cat gct gtc atc agc act gcc acc tgc atg cgg cgc				785
Phe Ser His Met His Ala Val Ile Ser Thr Ala Thr Cys Met Arg Arg				
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agc tcc atc caa agc acc ttc agc atc aac cca gaa atc gtc tgt gac				833
Ser Ser Ile Gln Ser Thr Phe Ser Ile Asn Pro Glu Ile Val Cys Asp				
234	239	244	249	
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Pro Leu Ser Asp Tyr Asn Val Trp Ser Met Leu Lys Pro Ile Asn Thr				
250	255	260	265	
act ggg aca tta aag cct gac gac agg gtt gtg gtt gct gcc acc cgg				929
Thr Gly Thr Leu Lys Pro Asp Asp Arg Val Val Val Ala Ala Thr Arg				
266	271	276	281	
ctg gat agt cgt tcc ttt ttc tgg aat gtg gcc cca ggg gct gaa agc				977
Leu Asp Ser Arg Ser Phe Phe Trp Asn Val Ala Pro Gly Ala Glu Ser				
282	287	292	297	
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Ala Val Ala Ser Phe Val Thr Gln Leu Ala Ala Ala Glu Ala Leu Gln				
298	303	308	313	
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Lys Ala Pro Asp Val Thr Thr Leu Pro Arg Asn Val Met Phe Val Phe				
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Phe Gln Gly Glu Thr Phe Asp Tyr Ile Gly Ser Ser Arg Met Val Tyr				
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gat atg gag aag ggc aag ttt ccc gtg cag tta gag aat gtt gac tca				1169
Asp Met Glu Lys Gly Lys Phe Pro Val Gln Leu Glu Asn Val Asp Ser				
346	351	356	361	
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Phe Val Glu Leu Gly Gln Val Ala Leu Arg Thr Ser Leu Glu Leu Trp				
362	367	372	377	
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Met His Thr Asp Pro Val Ser Gln Lys Asn Glu Ser Val Arg Asn Gln				
378	383	388	393	
gtg gag gat ctc ctg gcc aca ttg gag aag agt ggt gct ggt gtc cct				1313
Val Glu Asp Leu Leu Ala Thr Leu Glu Lys Ser Gly Ala Gly Val Pro				
394	399	404	409	

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Glu Glu Asp Leu Asn Phe Val Thr Asp Thr Ala Lys Ala Leu Ala Asp	
474 479 484 489	
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Val Ala Thr Val Leu Gly Arg Ala Leu Tyr Glu Leu Ala Gly Gly Thr	
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506 511 516 521	
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Leu Tyr Gly Phe Leu Ile Lys Ala Asn Asn Ser Trp Phe Gln Ser Ile	
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Leu Arg Gln Asp Leu Arg Ser Tyr Leu Gly Asp Gly Pro Leu Gln His	
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Tyr Ile Ala Val Ser Ser Pro Thr Asn Thr Thr Tyr Val Val Gln Tyr	
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Ala Leu Ala Asn Leu Thr Gly Thr Val Val Asn Leu Thr Arg Glu Gln	
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Cys Gln Asp Pro Ser Lys Val Pro Ser Glu Asn Lys Asp Leu Tyr Glu	
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Tyr Ser Trp Val Gln Gly Pro Leu His Ser Asn Glu Thr Asp Arg Leu	
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Pro Arg Cys Val Arg Ser Thr Ala Arg Leu Ala Arg Ala Leu Ser Pro	
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gag agc cgc tgg aaa gat atc cgt gcc cgg ata ttt ctc atc gcc agc	2081
Glu Ser Arg Trp Lys Asp Ile Arg Ala Arg Ile Phe Leu Ile Ala Ser	
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Lys Glu Leu Glu Leu Ile Thr Leu Thr Val Gly Phe Gly Ile Leu Ile	
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Phe Ser Leu Ile Val Thr Tyr Cys Ile Asn Ala Lys Ala Asp Val Leu	
682 687 692 697	
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			Met Ala Glu Glu Gly Ala Val			
			1	5		
gcc gtc tgc gtg cga gtg cgg ccg ctg aac agc aga gaa gaa tca ctt						159
Ala Val Cys Val Arg Val Arg Pro Leu Asn Ser Arg Glu Glu Ser Leu						
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Gly Glu Thr Ala Gln Val Tyr Trp Lys Thr Asp Asn Asn Val Ile Tyr						
24		29		34	39	
caa gtt gat gga agt aaa tcc ttc aat ttt gat cgt gtc ttt cat ggt						255
Gln Val Asp Gly Ser Lys Ser Phe Asn Phe Asp Arg Val Phe His Gly						
40		45		50	55	
aat gaa act acc aaa aat gtg tat gaa gaa ata gca gca cca atc atc						303
Asn Glu Thr Thr Lys Asn Val Tyr Glu Glu Ile Ala Ala Pro Ile Ile						
56		61		66	71	
gat tct gcc ata caa ggc tac aat ggt act ata ttt gcc tat gga cag						351
Asp Ser Ala Ile Gln Gly Tyr Asn Gly Thr Ile Phe Ala Tyr Gly Gln						
72		77		82	87	
act gct tca gga aaa aca tat acc atg atg ggt tca gaa gat cat ttg						399
Thr Ala Ser Gly Lys Thr Tyr Thr Met Met Gly Ser Glu Asp His Leu						
88		93		98	103	
gga gtt ata ccc agg gca att cat gac att ttc caa aaa att aag aag						447
Gly Val Ile Pro Arg Ala Ile His Asp Ile Phe Gln Lys Ile Lys Lys						
104		109		114	119	
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Phe Pro Asp Arg Glu Phe Leu Leu Arg Val Ser Tyr Met Glu Ile Tyr						
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Asn Glu Thr Ile Thr Asp Leu Leu Cys Gly Thr Gln Lys Met Lys Pro						
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tta att att cga gaa gat gtc aat agg aat gtg tat gtt gct gat ctc						591
Leu Ile Ile Arg Glu Asp Val Asn Arg Asn Val Tyr Val Ala Asp Leu						
152		157		162	167	
aca gaa gaa gtt gta tat aca tca gaa atg gct ttg aaa tgg att aca						639
Thr Glu Glu Val Val Tyr Thr Ser Glu Met Ala Leu Lys Trp Ile Thr						
168		173		178	183	
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Lys Gly Glu Lys Ser Arg His Tyr Gly Glu Thr Lys Met Asn Gln Arg						
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Ser Ser Arg Ser His Thr Ile Phe Arg Met Ile Leu Glu Ser Arg Glu						
200		205		210	215	

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232 237 242 247	
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Ala Gly Val Arg Leu Lys Glu Gly Cys Asn Ile Asn Arg Ser Leu Phe	
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Ile Leu Gly Gln Val Ile Lys Lys Leu Ser Asp Gly Gln Val Gly Gly	
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Leu Leu Lys Arg Tyr Arg Lys Glu Ile Met Asp Leu Lys Lys Gln Leu	
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Glu Glu Val Ser Leu Glu Thr Arg Ala Gln Ala Met Glu Lys Asp Gln	
360 365 370 375	
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Leu Ala Gln Leu Leu Glu Glu Lys Asp Leu Leu Gln Lys Val Gln Asn	
376 381 386 391	
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Glu Lys Ile Glu Asn Leu Thr Arg Met Leu Val Thr Ser Ser Ser Leu	
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Thr Leu Gln Gln Glu Leu Lys Ala Lys Arg Lys Arg Arg Val Thr Trp	
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Cys Leu Gly Lys Ile Asn Lys Met Lys Asn Ser Asn Tyr Ala Asp Gln	
424 429 434 439	

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Phe Ser Asn Thr Leu Asp Thr Leu Ser Glu Ile Glu Trp Asn Pro Ala	
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Leu Ile His Glu Ile Ser Asn Leu Lys Asn Leu Val Lys His Arg Glu	
552 557 562 567	
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Val Tyr Asn Gln Asp Leu Glu Asn Glu Leu Ser Ser Lys Val Glu Leu	
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584 589 594 599	
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Ser Gln Lys Leu Glu Asn Ile Lys Met Asp Leu Ser Tyr Ser Leu Glu	
600 605 610 615	
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Ser Ile Glu Asp Pro Lys Gln Met Lys Gln Thr Leu Phe Asp Ala Glu	
616 621 626 631	
act gta gcc ctt gat gcc aag aga gaa tca gcc ttt ctt aga agt gaa	2031
Thr Val Ala Leu Asp Ala Lys Arg Glu Ser Ala Phe Leu Arg Ser Glu	
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728 733 738 743	
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Ile Leu Leu Ser Glu Leu Lys Ser Leu Pro Ser Glu Val Glu Arg Leu	
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Thr Leu His Met Asp Phe Glu Gln Lys Tyr Lys Met Val Leu Glu Glu	
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Lys Phe Asp Ser Ser Leu Gly Ala Leu Lys Thr Glu Leu Ser Tyr Lys	
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Thr Leu Glu Glu Val Lys Thr Leu Thr Gln Glu Lys Asp Asp Leu Lys				
920	925	930	935	
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Ile His Asp Thr Val Asn Met Asn Ile Asp Thr Gln Glu Gln Leu Arg				
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984	989	994	999	
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1192 1197 1202 1207	
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Gln Glu Lys Val Asn Glu Leu Lys Gln Phe Lys Glu His Arg Lys Ala	
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Asn Arg Leu Gln Glu Ser Gln Glu Glu Ile Gln Ile Met Ile Lys Glu	
1576	1581 1586 1591
aaa gag gaa atg aaa aga gta cag gag gcc ctt cag ata gag aga gac	4911
Lys Glu Glu Met Lys Arg Val Gln Glu Ala Leu Gln Ile Glu Arg Asp	
1592	1597 1602 1607
caa ctg aaa gaa aac act aaa gaa att gta gct aaa atg aaa gaa tct	4959
Gln Leu Lys Glu Asn Thr Lys Glu Ile Val Ala Lys Met Lys Glu Ser	
1608	1613 1618 1623
caa gaa aaa gaa tat cag ttt ctt aag atg aca gct gtc aat gag act	5007
Gln Glu Lys Glu Tyr Gln Phe Leu Lys Met Thr Ala Val Asn Glu Thr	
1624	1629 1634 1639
cag gag aaa atg tgt gaa ata gaa cac ttg aag gag caa ttt gag acc	5055
Gln Glu Lys Met Cys Glu Ile Glu His Leu Lys Glu Gln Phe Glu Thr	
1640	1645 1650 1655
cag aag tta aac ctg gaa aac ata gaa acg gag aat ata agg ttg act	5103
Gln Lys Leu Asn Leu Glu Asn Ile Glu Thr Glu Asn Ile Arg Leu Thr	
1656	1661 1666 1671
cag ata cta cat gaa aac ctt gaa gaa atg aga tct gta aca aaa gaa	5151
Gln Ile Leu His Glu Asn Leu Glu Glu Met Arg Ser Val Thr Lys Glu	
1672	1677 1682 1687
aga gat gac ctt agg agt gtg gag gag act ctc aaa gta gag aga gac	5199
Arg Asp Asp Leu Arg Ser Val Glu Glu Thr Leu Lys Val Glu Arg Asp	
1688	1693 1698 1703
cag ctc aag gaa aac ctt aga gaa act ata act aga gac cta gaa aaa	5247
Gln Leu Lys Glu Asn Leu Arg Glu Thr Ile Thr Arg Asp Leu Glu Lys	
1704	1709 1714 1719
caa gag gag cta aaa att gtt cac atg cat ctg aag gag cac caa gaa	5295
Gln Glu Glu Leu Lys Ile Val His Met His Leu Lys Glu His Gln Glu	
1720	1725 1730 1735
act att gat aaa cta aga ggg att gtt tca gag aaa aca aat gaa ata	5343
Thr Ile Asp Lys Leu Arg Gly Ile Val Ser Glu Lys Thr Asn Glu Ile	
1736	1741 1746 1751
tca aat atg caa aag gac tta gaa cac tca aat gat gcc tta aaa gca	5391
Ser Asn Met Gln Lys Asp Leu Glu His Ser Asn Asp Ala Leu Lys Ala	
1752	1757 1762 1767
cag gat ctg aaa ata caa gag gaa cta aga att gct cac atg cat ctg	5439
Gln Asp Leu Lys Ile Gln Glu Glu Leu Arg Ile Ala His Met His Leu	
1768	1773 1778 1783
aaa gag cag cag gaa act att gac aaa ctc aga gga att gtt tct gag	5487
Lys Glu Gln Gln Glu Thr Ile Asp Lys Leu Arg Gly Ile Val Ser Glu	
1784	1789 1794 1799
aag aca gat aaa cta tca aat atg caa aaa gat tta gaa aat tca aat	5535
Lys Thr Asp Lys Leu Ser Asn Met Gln Lys Asp Leu Glu Asn Ser Asn	

1800	1805	1810	1815	
gct aaa tta caa gaa aag att caa gaa ctt aag gca aat gaa cat caa				5583
Ala Lys Leu Gln Glu Lys Ile Gln Glu Leu Lys Ala Asn Glu His Gln				
1816	1821	1826	1831	
ctt att acg tta aaa aaa gat gtc aat gag aca cag aaa aaa gtg tct				5631
Leu Ile Thr Leu Lys Lys Asp Val Asn Glu Thr Gln Lys Lys Val Ser				
1832	1837	1842	1847	
gaa atg gag caa cta aag aaa caa ata aaa gac caa agc tta act ctg				5679
Glu Met Glu Gln Leu Lys Lys Gln Ile Lys Asp Gln Ser Leu Thr Leu				
1848	1853	1858	1863	
agt aaa tta gaa ata gag aat tta aat ttg gct caa gaa ctt cat gaa				5727
Ser Lys Leu Glu Ile Glu Asn Leu Asn Leu Ala Gln Glu Leu His Glu				
1864	1869	1874	1879	
aac ctt gaa gaa atg aaa tct gta atg aaa gaa aga gat aat cta aga				5775
Asn Leu Glu Glu Met Lys Ser Val Met Lys Glu Arg Asp Asn Leu Arg				
1880	1885	1890	1895	
aga gta gag gag aca ctc aaa ctg gag aga gac caa ctc aag gaa agc				5823
Arg Val Glu Glu Thr Leu Lys Leu Glu Arg Asp Gln Leu Lys Glu Ser				
1896	1901	1906	1911	
ctg caa gaa acc aaa gct aga gat ctg gaa ata caa cag gaa cta aaa				5871
Leu Gln Glu Thr Lys Ala Arg Asp Leu Glu Ile Gln Gln Glu Leu Lys				
1912	1917	1922	1927	
act gct cgt atg cta tca aaa gaa cac aaa gaa act gtt gat aaa ctt				5919
Thr Ala Arg Met Leu Ser Lys Glu His Lys Glu Thr Val Asp Lys Leu				
1928	1933	1938	1943	
aga gaa aaa att tca gaa aag aca att caa att tca gac att caa aag				5967
Arg Glu Lys Ile Ser Glu Lys Thr Ile Gln Ile Ser Asp Ile Gln Lys				
1944	1949	1954	1959	
gat tta gat aaa tca aaa gat gaa tta cag aaa aag atc caa gaa ctt				6015
Asp Leu Asp Lys Ser Lys Asp Glu Leu Gln Lys Lys Ile Gln Glu Leu				
1960	1965	1970	1975	
cag aaa aaa gaa ctt caa ctg ctt aga gtg aaa gaa gat gtc aat atg				6063
Gln Lys Lys Glu Leu Gln Leu Leu Arg Val Lys Glu Asp Val Asn Met				
1976	1981	1986	1991	
agt cat aaa aaa att aat gaa atg gaa cag ttg aag aag caa ttt gag				6111
Ser His Lys Lys Ile Asn Glu Met Glu Gln Leu Lys Lys Gln Phe Glu				
1992	1997	2002	2007	
cca aac tat cta tgc aag tgt gag atg gat aac ttc cag ttg act aag				6159
Pro Asn Tyr Leu Cys Lys Cys Glu Met Asp Asn Phe Gln Leu Thr Lys				
2008	2013	2018	2023	
aaa ctt cat gaa agc ctt gaa gaa ata aga att gta gct aaa gaa aga				6207
Lys Leu His Glu Ser Leu Glu Glu Ile Arg Ile Val Ala Lys Glu Arg				
2024	2029	2034	2039	

gat gag cta agg agg ata aaa gaa tct ctc aaa atg gaa agg gac caa	6255
Asp Glu Leu Arg Arg Ile Lys Glu Ser Leu Lys Met Glu Arg Asp Gln	
2040                      2045                      2050                      2055	
ttc ata gca acc tta agg gaa atg ata gct aga gac cga cag aac cac	6303
Phe Ile Ala Thr Leu Arg Glu Met Ile Ala Arg Asp Arg Gln Asn His	
2056                      2061                      2066                      2071	
caa gta aaa cct gaa aaa agg tta cta agt gat gga caa cag cac ctt	6351
Gln Val Lys Pro Glu Lys Arg Leu Leu Ser Asp Gly Gln Gln His Leu	
2072                      2077                      2082                      2087	
atg gaa agc ctg aga gaa aag tgc tct aga ata aad gag ctt ttg aag	6399
Met Glu Ser Leu Arg Glu Lys Cys Ser Arg Ile Lys Glu Leu Leu Lys	
2088                      2093                      2098                      2103	
aga tac tca gag atg gat gat cat tat gag tgc ttg aat aga ttg tct	6447
Arg Tyr Ser Glu Met Asp Asp His Tyr Glu Cys Leu Asn Arg Leu Ser	
2104                      2109                      2114                      2119	
ctt gac ttg gag aag gaa att gaa ttc cac aga atc atg aag aaa ctg	6495
Leu Asp Leu Glu Lys Glu Ile Glu Phe His Arg Ile Met Lys Lys Leu	
2120                      2125                      2130                      2135	
aag tat gtg tta agc tat gtt aca aaa ata aaa gaa gaa caa cat gaa	6543
Lys Tyr Val Leu Ser Tyr Val Thr Lys Ile Lys Glu Glu Gln His Glu	
2136                      2141                      2146                      2151	
tcc atc aat aaa ttt gaa atg gat ttt att gat gaa gtg gaa aag caa	6591
Ser Ile Asn Lys Phe Glu Met Asp Phe Ile Asp Glu Val Glu Lys Gln	
2152                      2157                      2162                      2167	
aag gaa ttg cta att aaa ata cag cac ctt caa caa gat tgt gat gta	6639
Lys Glu Leu Leu Ile Lys Ile Gln His Leu Gln Gln Asp Cys Asp Val	
2168                      2173                      2178                      2183	
cca tcc aga gaa tta agg gat ctc aaa ttg aac cag aat atg gat cta	6687
Pro Ser Arg Glu Leu Arg Asp Leu Lys Leu Asn Gln Asn Met Asp Leu	
2184                      2189                      2194                      2199	
cat att gag gaa att ctc aaa gat ttc tca gaa agt gag ttc cct agc	6735
His Ile Glu Glu Ile Leu Lys Asp Phe Ser Glu Ser Glu Phe Pro Ser	
2200                      2205                      2210                      2215	
ata aag act gaa ttt caa caa gta cta agt aat agg aaa gaa atg aca	6783
Ile Lys Thr Glu Phe Gln Gln Val Leu Ser Asn Arg Lys Glu Met Thr	
2216                      2221                      2226                      2231	
cag ttt ttg gaa gag tgg tta aat act cgt ttt gat ata gaa aag ctt	6831
Gln Phe Leu Glu Glu Trp Leu Asn Thr Arg Phe Asp Ile Glu Lys Leu	
2232                      2237                      2242                      2247	
aaa aat ggc atc cag aaa gaa aat gat agg att tgt caa gtg aat aac	6879
Lys Asn Gly Ile Gln Lys Glu Asn Asp Arg Ile Cys Gln Val Asn Asn	
2248                      2253                      2258                      2263	

ttc ttt aat aac aga ata att gcc ata atg aat gaa tca aca gag ttt	6927
Phe Phe Asn Asn Arg Ile Ile Ala Ile Met Asn Glu Ser Thr Glu Phe	
2264 2269 2274 2279	
gag gaa aga agt gct acc ata tcc aaa gag tgg gaa cag gac ctg aaa	6975
Glu Glu Arg Ser Ala Thr Ile Ser Lys Glu Trp Glu Gln Asp Leu Lys	
2280 2285 2290 2295	
tca ctg aaa gag aaa aat gaa aaa cta ttt aaa aac tac caa aca ttg	7023
Ser Leu Lys Glu Lys Asn Glu Lys Leu Phe Lys Asn Tyr Gln Thr Leu	
2296 2301 2306 2311	
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Lys Thr Ser Leu Ala Ser Gly Ala Gln Val Asn Pro Thr Thr Gln Asp	
2312 2317 2322 2327	
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Asn Lys Asn Pro His Val Thr Ser Arg Ala Thr Gln Leu Thr Thr Glu	
2328 2333 2338 2343	
aaa att cga gag ctg gaa aat tca ctg cat gaa gct aaa gaa agt gct	7167
Lys Ile Arg Glu Leu Glu Asn Ser Leu His Glu Ala Lys Glu Ser Ala	
2344 2349 2354 2359	
atg cat aag gaa agc aag att ata aag atg cag aaa gaa ctt gag gtg	7215
Met His Lys Glu Ser Lys Ile Ile Lys Met Gln Lys Glu Leu Glu Val	
2360 2365 2370 2375	
act aat gac ata ata gca aaa ctt caa gcc aaa gtt cat gaa tca aat	7263
Thr Asn Asp Ile Ile Ala Lys Leu Gln Ala Lys Val His Glu Ser Asn	
2376 2381 2386 2391	
aaa tgc ctt gaa aaa aca aaa gag aca att caa gta ctt cag gac aaa	7311
Lys Cys Leu Glu Lys Thr Lys Glu Thr Ile Gln Val Leu Gln Asp Lys	
2392 2397 2402 2407	
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Val Ala Leu Gly Ala Lys Pro Tyr Lys Glu Glu Ile Glu Asp Leu Lys	
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Met Lys Leu Val Lys Ile Asp Leu Glu Lys Met Lys Asn Ala Lys Glu	
2424 2429 2434 2439	
ttt gaa aag gaa atc agt gct aca aaa gcc act gta gaa tat caa aag	7455
Phe Glu Lys Glu Ile Ser Ala Thr Lys Ala Thr Val Glu Tyr Gln Lys	
2440 2445 2450 2455	
gaa gtt ata agg cta ttg aga gaa aat ctc aga aga agt caa cag gcc	7503
Glu Val Ile Arg Leu Leu Arg Glu Asn Leu Arg Arg Ser Gln Gln Ala	
2456 2461 2466 2471	
caa gat acc tca gtg ata tca gaa cat act gat cct cag cct tca aat	7551
Gln Asp Thr Ser Val Ile Ser Glu His Thr Asp Pro Gln Pro Ser Asn	
2472 2477 2482 2487	
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 Met Trp Thr Val Gln Asn Arg Glu  
 1 5

agt ctg ggg ctt ctc tct ttc cct gtg atg att acc atg gtc tgt tgt 159  
 Ser Leu Gly Leu Leu Ser Phe Pro Val Met Ile Thr Met Val Cys Cys  
 9 14 19 24

gca cac agc acc aat gaa ccc agc aac atg tca tac gtg aaa gag aca 207  
 Ala His Ser Thr Asn Glu Pro Ser Asn Met Ser Tyr Val Lys Glu Thr  
 25 30 35 40

gtg gac aga ttg ctc aaa gga tat gac att cgc ttg cgg ccg gac ttc 255  
 Val Asp Arg Leu Leu Lys Gly Tyr Asp Ile Arg Leu Arg Pro Asp Phe  
 41 46 51 56

gga ggg ccc ccc gtc gac gtt ggg atg cgg atc gat gtc gcc agc ata 303  
 Gly Gly Pro Pro Val Asp Val Gly Met Arg Ile Asp Val Ala Ser Ile  
 57 62 67 72

gac atg gtc tcc gaa gtg aat atg gat tat aca ctc acc atg tat ttc 351  
 Asp Met Val Ser Glu Val Asn Met Asp Tyr Thr Leu Thr Met Tyr Phe  
 73 78 83 88

cag cag tct tgg aaa gac aaa agg ctt tct tat tct gga atc cca ctg 399  
 Gln Gln Ser Trp Lys Asp Lys Arg Leu Ser Tyr Ser Gly Ile Pro Leu  
 89 94 99 104

aac ctc acc cta gac aat agg gta gct gac caa ctc tgg gta cca gac 447  
 Asn Leu Thr Leu Asp Asn Arg Val Ala Asp Gln Leu Trp Val Pro Asp  
 105 110 115 120

acc tac ttt ctg aat gac aag aaa tca ttt gtg cat ggg gtc aca gtg 495  
 Thr Tyr Phe Leu Asn Asp Lys Lys Ser Phe Val His Gly Val Thr Val  
 121 126 131 136

aaa aat cga atg att cga ctg cat cct gat gga aca gtt ctc tat gga 543  
 Lys Asn Arg Met Ile Arg Leu His Pro Asp Gly Thr Val Leu Tyr Gly

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Leu Arg Ile Thr Thr	Thr Ala Ala Cys Met	Met Asp Leu Arg Arg Tyr					
153	158	163	168				
cca ctg gat gag cag	aac tgc acc ctg gag	atc gaa agt tat ggc tat	639				
Pro Leu Asp Glu Gln	Asn Cys Thr Leu Glu	Ile Glu Ser Tyr Gly Tyr					
169	174	179	184				
acc act gat gac att	gaa ttt tac tgg aat	gga gga gaa ggg gca gtc	687				
Thr Thr Asp Asp Ile	Glu Phe Tyr Trp Asn	Gly Gly Glu Gly Ala Val					
185	190	195	200				
act ggt gtt aat aaa	atc gaa ctt cct caa	ttt tca att gtt gac tac	735				
Thr Gly Val Asn Lys	Ile Glu Leu Pro Gln	Phe Ser Ile Val Asp Tyr					
201	206	211	216				
aag atg gtg tct aag	aag gtg gag ttc aca	aca gga gcg tat cca cga	783				
Lys Met Val Ser Lys	Lys Val Glu Phe Thr	Thr Gly Ala Tyr Pro Arg					
217	222	227	232				
ctg tca cta agt ttt	cgt cta aag aga aac	att ggt tac ttc att ttg	831				
Leu Ser Leu Ser Phe	Arg Leu Lys Arg Asn	Ile Gly Tyr Phe Ile Leu					
233	238	243	248				
caa acc tac atg cct	tct aca ctg att aca	att ctg tcc tgg gtg tct	879				
Gln Thr Tyr Met Pro	Ser Thr Leu Ile Thr	Ile Leu Ser Trp Val Ser					
249	254	259	264				
ttt tgg atc aac tat	gat gca tct gca gcc	aga gtc gca cta gga atc	927				
Phe Trp Ile Asn Tyr	Asp Ala Ser Ala Ala	Arg Val Ala Leu Gly Ile					
265	270	275	280				
acg acg gtg ctt aca	atg aca acc atc agc	acc cac ctc agg gag acc	975				
Thr Thr Val Leu Thr	Met Thr Thr Ile Ser	Thr His Leu Arg Glu Thr					
281	286	291	296				
ctg cca aag atc cct	tat gtc aaa gcg att	gat att tat ctg atg ggt	1023				
Leu Pro Lys Ile Pro	Tyr Val Lys Ala Ile	Asp Ile Tyr Leu Met Gly					
297	302	307	312				
tgc ttt gtg ttt gtg	ttc ctg gct ctg ctg	gag tat gcc ttt gta aat	1071				
Cys Phe Val Phe Val	Phe Leu Ala Leu Leu	Glu Tyr Ala Phe Val Asn					
313	318	323	328				
tac atc ttc ttt ggg	aaa ggc cct cag aaa	aag gga gct agc aaa caa	1119				
Tyr Ile Phe Phe Gly	Lys Gly Pro Gln Lys	Lys Gly Ala Ser Lys Gln					
329	334	339	344				
gac cag agt gcc aat	gag aag aat aaa ctg	gag atg aat aaa gtc cag	1167				
Asp Gln Ser Ala Asn	Glu Lys Asn Lys Leu	Glu Met Asn Lys Val Gln					
345	350	355	360				
gtc gac gcc cac ggt	aac att ctc ctc agc	acc ctg gaa atc cgg aat	1215				
Val Asp Ala His Gly	Asn Ile Leu Leu Ser	Thr Leu Glu Ile Arg Asn					
361	366	371	376				

gag acg agt ggc tgc gaa gtg ctc acg agc gtg agc gac ccc aag gcc	1263
Glu Thr Ser Gly Ser Glu Val Leu Thr Ser Val Ser Asp Pro Lys Ala	
377 382 387 392	
acc atg tac tcc tat gac agc gcc agc atc cag tac cgc aag ccc ctg	1311
Thr Met Tyr Ser Tyr Asp Ser Ala Ser Ile Gln Tyr Arg Lys Pro Leu	
393 398 403 408	
agc agc cgc gag gcc tac ggg cgc gcc ctg gac cgg cac ggg gta ccc	1359
Ser Ser Arg Glu Ala Tyr Gly Arg Ala Leu Asp Arg His Gly Val Pro	
409 414 419 424	
agc aag ggg cgc atc cgc agg cgt gcc tcc cag ctc <sup>1</sup> aaa gtc aag atc	1407
Ser Lys Gly Arg Ile Arg Arg Arg Ala Ser Gln Leu Lys Val Lys Ile	
425 430 435 440	
ccc gac ttg act gat gtg aat tcc ata gac aag tgg tcc cga atg ttt	1455
Pro Asp Leu Thr Asp Val Asn Ser Ile Asp Lys Trp Ser Arg Met Phe	
441 446 451 456	
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Phe Pro Ile Thr Phe Ser Leu Phe Asn Val Val Tyr Trp Leu Tyr Tyr	
457 462 467 472	
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Val His *	
473	
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	Met Ser
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Gln	Arg	Leu	Glu	Leu	Cys	Ala	Val	His	Ala	Leu	Asn	Asn	Val	Leu	Gln		
19					24					29					34		
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Gln	Gln	Leu	Phe	Ser	Gln	Glu	Ala	Ala	Asp	Glu	Ile	Cys	Lys	Arg	Leu		
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Ala	Pro	Asp	Ser	Arg	Leu	Asn	Pro	His	Arg	Ser	Leu	Leu	Gly	Thr	Gly		
51					56					61					66		
aac	tat	gat	gtc	aat	gtg	atc	atg	gcc	gct	ctg	cag	ggg	ctg	ggc	ctg	416	
Asn	Tyr	Asp	Val	Asn	Val	Ile	Met	Ala	Ala	Leu	Gln	Gly	Leu	Gly	Leu		
67					72					77					82		
gcc	gcc	gtg	tgg	tgg	gac	agg	agg	agg	ccc	ctg	tcc	cag	ctg	gcc	ctg	464	
Ala	Ala	Val	Trp	Trp	Asp	Arg	Arg	Arg	Pro	Leu	Ser	Gln	Leu	Ala	Leu		
83					88					93					98		
ccc	cag	gta	ctg	ggg	ctg	atc	ctg	aac	ctg	ccc	tgc	ccc	gtg	tgc	ctg	512	
Pro	Gln	Val	Leu	Gly	Leu	Ile	Leu	Asn	Leu	Pro	Ser	Pro	Val	Ser	Leu		
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Gly	Leu	Leu	Ser	Leu	Pro	Leu	Arg	Arg	Arg	His	Trp	Val	Ala	Leu	Arg		
115					120					125					130		
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Gln	Val	Asp	Gly	Val	Tyr	Tyr	Asn	Leu	Asp	Ser	Lys	Leu	Arg	Ala	Pro		
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Glu	Ala	Leu	Gly	Asp	Glu	Asp	Gly	Val	Arg	Ala	Phe	Leu	Ala	Ala	Ala		
147					152					157					162		
ctg	gcc	cag	ggc	ctg	tgc	gag	gtg	ctg	ctg	gta	gtg	acc	aag	gag	gtg	704	
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163					168					173					178		
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Glu	Glu	Lys	Gly	Ser	Trp	Leu	Arg	Thr	Asp	*							
179					184					189							
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Ile Leu Ile His Asp Val Leu Leu Pro Glu Glu Ala Lys Thr Met Phe	
353 358 363 368	
aaa gtt cac aac ttc agc aaa cca gtc tta att ctt cct aat gaa tca	1388
Lys Val His Asn Phe Ser Lys Pro Val Leu Ile Leu Pro Asn Glu Ser	
369 374 379 384	
gga tac att ttt acc ctg ctt ttt atg cct tcc aca tca tcc atg cac	1436
Gly Tyr Ile Phe Thr Leu Leu Phe Met Pro Ser Thr Ser Ser Met His	
385 390 395 400	
att gat aac aac att tta ctt att acc aat gct tct aaa ttt cat tta	1484
Ile Asp Asn Asn Ile Leu Leu Ile Thr Asn Ala Ser Lys Phe His Leu	
401 406 411 416	
ccc gtg cgg gta tac aca ggc ttt tta gat tac ttt gta ttg ccc ccc	1532
Pro Val Arg Val Tyr Thr Gly Phe Leu Asp Tyr Phe Val Leu Pro Pro	
417 422 427 432	
aaa ata gag gaa cgt ttc ata gat ttt gga gta ctg agt gct aca gaa	1580
Lys Ile Glu Glu Arg Phe Ile Asp Phe Gly Val Leu Ser Ala Thr Glu	
433 438 443 448	
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Ala Ser Asn Ile Leu Phe Ala Ile Ile Asn Ser Asn Pro Ile Glu Leu	
449 454 459 464	
gct ata aaa agt tgg cat atc ata gga gac ggt tta tca ata gaa ctt	1676
Ala Ile Lys Ser Trp His Ile Ile Gly Asp Gly Leu Ser Ile Glu Leu	
465 470 475 480	
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Val Ala Val Glu Arg Gly Asn Arg Thr Thr Ile Ile Ser Ser Leu Pro	
481 486 491 496	
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Glu Phe Glu Lys Ser Ser Leu Ser Asp Gln Ser Ser Val Thr Leu Ala	
497 502 507 512	
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Ser Gly Tyr Phe Ala Val Phe Arg Val Lys Leu Thr Ala Lys Lys Leu	
513 518 523 528	
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Glu Gly Ile His Asp Gly Ala Ile Gln Ile Thr Thr Asp Tyr Glu Ile	

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Leu Thr Ile Pro Val Lys Ala Val Ile Ala Val Gly Ser Leu Thr Cys				
545	550	555	560	
ttc cct aag cac gtg gtt ctt cca cct tcc ttt cca ggg aaa ata gtt				1964
Phe Pro Lys His Val Val Leu Pro Pro Ser Phe Pro Gly Lys Ile Val				
561	566	571	576	
cat caa agt tta aat att atg aat tcc ttc tca cag aag gta aaa ata				2012
His Gln Ser Leu Asn Ile Met Asn Ser Phe Ser Gln Lys Val Lys Ile				
577	582	587	592	
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Gln Gln Ile Arg Ser Leu Ser Glu Asp Val Arg Phe Tyr Tyr Lys Arg				
593	598	603	608	
tta cgg ggc aat aag gaa gac ttg gag cca gga aaa aaa tca aag att				2108
Leu Arg Gly Asn Lys Glu Asp Leu Glu Pro Gly Lys Lys Ser Lys Ile				
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Ala Asn Ile Tyr Phe Asp Pro Gly Leu Gln Cys Gly Asp His Cys Tyr				
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Val Gly Leu Pro Phe Leu Ser Lys Ser Glu Pro Lys Val Gln Pro Gly				
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Val Ala Met Gln Glu Asp Met Trp Asp Ala Asp Trp Asp Leu His Gln				
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agc ctg ttc aag gga tgg aca gga ata aag gaa aat tca ggt cat aga				2300
Ser Leu Phe Lys Gly Trp Thr Gly Ile Lys Glu Asn Ser Gly His Arg				
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Ser Lys Ile Thr Ala Glu Leu Ser Trp Pro Ser Ile Leu Ser Ser Pro				
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Arg His Leu Lys Phe Pro Leu Thr Asn Thr Asn Cys Ser Ser Glu Glu				
721	726	731	736	
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Thr Gly Phe Met Glu Gly Leu Ser Arg His Leu Ile Leu Asn Leu Ile	
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865 870 875 880	
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Ile Thr Glu Ala Leu Leu Lys Asp Cys Thr Asp Ser Leu Lys Leu Arg	
881 886 891 896	
gaa cca aat ttc aca ttg aaa aga aca ttt aag gta gag aat aca gga	2972
Glu Pro Asn Phe Thr Leu Lys Arg Thr Phe Lys Val Glu Asn Thr Gly	
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Glu Gly Tyr Gly Phe Lys Val Val Asn Cys Gln Glu Phe Thr Leu Ser	
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Ala Asn Ala Ser Arg Asp Ile Ile Ile Leu Phe Thr Pro Asp Phe Thr	
945 950 955 960	
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Ala Ser Arg Val Ile Arg Glu Leu Lys Phe Ile Thr Thr Ser Gly Ser	
961 966 971 976	
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Glu Phe Val Phe Ile Leu Asn Ala Ser Leu Pro Tyr His Met Leu Ala	
977 982 987 992	

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Thr Cys Ala Glu Ala Leu Pro Arg Pro Asn Trp Glu Leu Ala Leu Tyr	
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Ile Ile Ile Ser Gly Ile Met Ser Ala Leu Phe Leu Leu Val Ile Gly	
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Leu Ser Phe Glu Ala Ser Asn Pro Pro Phe Asp Val Gly Arg Pro Phe	
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Asp Leu Arg Arg Ile Val Gly Ile Ser Ser Glu Gly Asn Leu Asn Thr	
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Pro Ala Ser Pro Ser Pro Pro Ala Ala Pro Cys Pro Phe Val Val Arg				
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Gly Ser Tyr Ser Ser Ile Val Asn Ser Ser Ser Ser Ser Asp Pro Lys				
1505	1510	1515	1520	
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Ile Lys Gln Pro Asn Gly Ser Lys His Lys Leu Thr Lys Ala Ala Ser				
1521	1526	1531	1536	
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Leu Pro Gly Lys Asn Gly Asn Pro Thr Phe Ala Ala Val Thr Ala Gly				
1537	1542	1547	1552	
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Tyr Asp Lys Ser Pro Gly Gly Asn Gly Phe Ala Lys Val Ser Ser Asn				
1553	1558	1563	1568	
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Lys Thr Gly Phe Ser Ser Ser Leu Gly Ile Ser His Ala Pro Val Asp				
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Ser Ser Pro Asp Phe Thr Pro Leu Asn Ser Phe Ser Ala Phe Gly Asn				
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Ser Phe Asn Leu Thr Gly Glu Val Phe Ser Lys Leu Gly Leu Ser Arg				
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Asn Thr Ser Gly Leu Trp Ser Thr Thr Pro Phe Ser Ser Ser Ile Trp	
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              Met Cys Cys Trp Ile Trp Phe Ala Gly Ile Leu Cys Lys
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gat tat ctg aat cga cca agg cct acc tgg gaa gaa gta aaa gag caa      528
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cta gaa aag aaa aag aaa ggc tcc aag gct ttg gct gaa ttt gaa gaa      576
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Pro	Leu	Pro	Pro	Leu	Pro	Glu	Asp	Glu	Glu	Gly	Ser	Glu	Val	Thr	Asn		
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Pro	Pro	Gly	Asp	Ala	Cys	Arg	Ser	Arg	Ile	Pro	Ser	Pro	Leu	Gln	Pro		
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Glu	Met	Gln	Gly	Thr	Pro	Asp	Asp	Glu	Pro	Ser	Glu	Pro	Glu	Pro	Ser		
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Gln	Arg	Trp	Lys	Glu	Ala	Ser	His	Arg	Asn	Gln	Leu	Arg	Tyr	Ser	Glu		
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Gly Cys Arg Arg Ile Pro Val Leu Val Phe His Ala Asp Ala Ile Leu	
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Thr Lys Asp Asn Asn Ile Arg Val Ile Gly Glu Arg Tyr His Leu Ser	
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Tyr Lys Ile Val Arg Thr Asp Ser Arg Leu Val Arg Ser Ile Leu Thr	
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Lys Asp Arg Leu Tyr Lys Asn Ile Ile Arg Met Gln His Thr His Gly	
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Phe Lys Val Phe His Ile Leu Pro Gln Thr Phe Leu Leu Pro Ala Glu	
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Val Lys Pro Val Ala Ser Ser Arg Gly Arg Gly Val Tyr Leu Ile Asn	
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Asn Pro Asn Gln Ile Ser Leu Glu Glu Asn Ile Leu Val Ser Arg Tyr	
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Ile Asn Asn Pro Leu Leu Ile Asp Asp Phe Lys Phe Asp Val Arg Leu	
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Tyr Val Leu Val Thr Ser Tyr Asp Pro Leu Val Ile Tyr Leu Tyr Glu	
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Glu Gly Leu Ala Arg Phe Ala Thr Val Arg Tyr Asp Gln Gly Ala Lys	
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Gly Arg Asp Thr Thr Ala Leu Met Ala His Val Glu Asp Leu Ile Ile	
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Lys Thr Ile Ile Ser Ala Glu Leu Ala Ile Ala Thr Ala Cys Lys Thr	
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Pro Ser Leu Ala Cys Asp Ala Pro Leu Asp Leu Lys Ile Lys Ala Ser	

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Ala Gln Arg Ala Ser Thr Arg Pro Ile Tyr Pro Thr Phe Glu Ser Ser				
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Arg Arg Asn Pro Phe Gln Lys Pro Gln Arg Cys Arg Pro Leu Ser Ala				
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Ser Asp Ala Glu Met Lys Asn Leu Val Gly Ser Ala Arg Glu Lys Gly				
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Pro Gly Lys Leu Gly Gly Ser Val Leu Gly Leu Ser Met Glu Glu Ile				
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Lys Val Leu Arg Arg Val Lys Glu Glu Asn Asp Arg Arg Gly Gly Phe				
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Ile Arg Ile Phe Pro Thr Ser Glu Thr Trp Glu Ile Tyr Gly Ser Tyr				
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Gln Ala Arg Ile Ala Phe Ser Ala Tyr Leu Gln His Val Gln Ile Arg	
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Lys Glu Asp Glu Gln Met Glu Leu Val Val Arg Phe Leu Lys Arg Ala	
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Gly Thr His Ser Lys Ile Ser Lys Asn Asn Asn Asn Tyr Ser Asp Ser	
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Ile	Ala	Ala	Ser	Leu	Glu	Leu	Asn	Asn	Pro	Val	Pro	Glu	Gln	Pro	Pro	
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Ala	Ala	Thr	Gln	Arg	Lys	Pro	Gly	Thr	Lys	Leu	Leu	Leu	Pro	Arg	Ala	
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gcc	tct	gtt	aga	gga	aga	agc	atc	cct	ggg	gct	gcg	gag	aag	ccc	aag	827
Ala	Ser	Val	Arg	Gly	Arg	Ser	Ile	Pro	Gly	Ala	Ala	Glu	Lys	Pro	Lys	
241					246					251					256	
aaa	gag	att	cca	gct	agt	cct	tcc	agg	aca	aaa	atc	cca	gct	gag	aag	875
Lys	Glu	Ile	Pro	Ala	Ser	Pro	Ser	Arg	Thr	Lys	Ile	Pro	Ala	Glu	Lys	
257					262					267					272	
gaa	tcc	cac	cgg	gat	gtt	ctc	cct	gac	aaa	cct	gcc	ccg	ggt	gct	gtc	923
Glu	Ser	His	Arg	Asp	Val	Leu	Pro	Asp	Lys	Pro	Ala	Pro	Gly	Ala	Val	

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aat gtg ccg gcc gcc gga agc cac ttg ggc cag ggc aag cgg gcg atc				971
Asn Val Pro Ala Ala Gly Ser His Leu Gly Gln Gly Lys Arg Ala Ile				
289	294	299	304	
cct gtt cca aac aag ttg ggg ctg aag aag acc ctg tta aaa gca ccc				1019
Pro Val Pro Asn Lys Leu Gly Leu Lys Lys Thr Leu Leu Lys Ala Pro				
305	310	315	320	
ggc tct acc agc aat ctc gca agg aag tcc tcc tcg ggg cct gtt tgg				1067
Gly Ser Thr Ser Asn Leu Ala Arg Lys Ser Ser Ser Gly Pro Val Trp				
321	326	331	336	
agc ggg gca tcc agt gcg tgc aca tcc cca gca gtg ggc aaa gct aaa				1115
Ser Gly Ala Ser Ser Ala Cys Thr Ser Pro Ala Val Gly Lys Ala Lys				
337	342	347	352	
tca agt gaa ttt gca agt att cct gca aat agc tcc cgg cct ctg tca				1163
Ser Ser Glu Phe Ala Ser Ile Pro Ala Asn Ser Ser Arg Pro Leu Ser				
353	358	363	368	
aac atc agc aag tca ggc aga atg gga ccc gcc atg ctg cgg cca gct				1211
Asn Ile Ser Lys Ser Gly Arg Met Gly Pro Ala Met Leu Arg Pro Ala				
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ctg cct gca ggc cct gtg ggg gca tcc tcc tgg cag gcc aag cgg gtc				1259
Leu Pro Ala Gly Pro Val Gly Ala Ser Ser Trp Gln Ala Lys Arg Val				
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Asp Val Ser Glu Leu Ala Ala Glu Gln Leu Thr Ala Pro Pro Ser Ala				
401	406	411	416	
tcc ccc acc caa ccc cag act ccg gaa ggt ggc ggc cag tgg ctg aac				1355
Ser Pro Thr Gln Pro Gln Thr Pro Glu Gly Gly Gly Gln Trp Leu Asn				
417	422	427	432	
tcc agt tgc gct tgg tca gaa tct tct caa ttg aat aag act aga agt				1403
Ser Ser Cys Ala Trp Ser Glu Ser Ser Gln Leu Asn Lys Thr Arg Ser				
433	438	443	448	
atc aga cgg cga gat tcc tgt cta aat tcc aag aca aag gtt atg cct				1451
Ile Arg Arg Arg Asp Ser Cys Leu Asn Ser Lys Thr Lys Val Met Pro				
449	454	459	464	
act cct aca aat caa ttt aaa att cct aag ttt tct att ggt gac tcc				1499
Thr Pro Thr Asn Gln Phe Lys Ile Pro Lys Phe Ser Ile Gly Asp Ser				
465	470	475	480	
ccg gac agc tca aca cca aag ctt tcg cgg gca cag cgg ccg cag tcg				1547
Pro Asp Ser Ser Thr Pro Lys Leu Ser Arg Ala Gln Arg Pro Gln Ser				
481	486	491	496	
tgc acg tca gtt ggc agg gtc act gtc cac agc acc ccg gtt aga cgc				1595
Cys Thr Ser Val Gly Arg Val Thr Val His Ser Thr Pro Val Arg Arg				
497	502	507	512	

tca tct ggg cca gca cca caa agc ctg ctg agc gca cgg cgt gtg tca Ser Ser Gly Pro Ala Pro Gln Ser Leu Leu Ser Ala Arg Arg Val Ser 513 518 523 528	1643
gcc ttg ccc aca ccc gcc agc cgg cgc tgc tct ggc ctt cca ccg atg Ala Leu Pro Thr Pro Ala Ser Arg Arg Cys Ser Gly Leu Pro Pro Met 529 534 539 544	1691
acc ccc aaa acg atg ccc agg gcc gtg ggc tct ccc ctg tgt gtg cca Thr Pro Lys Thr Met Pro Arg Ala Val Gly Ser Pro Leu Cys Val Pro 545 550 555 560	1739
gct cgg aga cgt tcc tct gag ccc cgc aag aac tct gca atg aga act Ala Arg Arg Arg Ser Ser Glu Pro Arg Lys Asn Ser Ala Met Arg Thr 561 566 571 576	1787
gaa cca aca agg gag agc aac aga aag aca gat tcc agg ctg gtg gat Glu Pro Thr Arg Glu Ser Asn Arg Lys Thr Asp Ser Arg Leu Val Asp 577 582 587 592	1835
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aac ttt tct cca gag gaa agc gat tct act ttc tcc aaa agt act gcc Asn Phe Ser Pro Glu Glu Ser Asp Ser Thr Phe Ser Lys Ser Thr Ala 609 614 619 624	1931
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agt gag gct ctt ctt gta gat atc aaa ctg gaa cca ctc gcg gtc act Ser Glu Ala Leu Leu Val Asp Ile Lys Leu Glu Pro Leu Ala Val Thr 641 646 651 656	2027
cca gat gct gca agc cag ccc ctc att gac ctt cct ctc atc gac ttc Pro Asp Ala Ala Ser Gln Pro Leu Ile Asp Leu Pro Leu Ile Asp Phe 657 662 667 672	2075
tgc gat acc cca gaa gca cac gtg gct gta gga tct gaa agc agg cct Cys Asp Thr Pro Glu Ala His Val Ala Val Gly Ser Glu Ser Arg Pro 673 678 683 688	2123
ctg atc gac ctc atg aca aac act cca gac atg aat aaa aat gtg gcc Leu Ile Asp Leu Met Thr Asn Thr Pro Asp Met Asn Lys Asn Val Ala 689 694 699 704	2171
aaa cct tca ccg gtg gtg gga cag ctc ata gac ctg agc tcc cct ctg Lys Pro Ser Pro Val Val Gly Gln Leu Ile Asp Leu Ser Ser Pro Leu 705 710 715 720	2219
atc cag ctg agc cct gag gct gac aag gag aac gtg gat tcc cca ctc Ile Gln Leu Ser Pro Glu Ala Asp Lys Glu Asn Val Asp Ser Pro Leu 721 726 731 736	2267

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 Leu Lys Phe \*  
 737

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 Met Glu Gly Gly Gly Gly Arg Asp Glu Pro Ser Ala Cys Arg Ala Gly  
 1 5 10 15  
 gac gtg aac atg gat gac cct aag aag gaa gac att ctt ctt ttg gcc 155  
 Asp Val Asn Met Asp Asp Pro Lys Lys Glu Asp Ile Leu Leu Leu Ala  
 17 22 27 32

gat gaa aaa ttt gac ttc gat ctt tca ttg tct tct tcg agt gca aat	203
Asp Glu Lys Phe Asp Phe Asp Leu Ser Leu Ser Ser Ser Ser Ala Asn	
33 38 43 48	
gaa gat gat gaa gtc ttc ttc gga ccc ttt gga cat aaa gaa aga tgt	251
Glu Asp Asp Glu Val Phe Phe Gly Pro Phe Gly His Lys Glu Arg Cys	
49 54 59 64	
att gct gcc agc ttg gaa tta aat aat ccg gtt ccc gaa cag cct ccg	299
Ile Ala Ala Ser Leu Glu Leu Asn Asn Pro Val Pro Glu Gln Pro Pro	
65 70 75 80	
ttg ccc aca tct gag agt ccc ttt gcc tgg agc cct ctg gcc ggg gag	347
Leu Pro Thr Ser Glu Ser Pro Phe Ala Trp Ser Pro Leu Ala Gly Glu	
81 86 91 96	
aag ttc gtg gag gtg tac aaa gaa gct cac tta ctg gct tta cac att	395
Lys Phe Val Glu Val Tyr Lys Glu Ala His Leu Leu Ala Leu His Ile	
97 102 107 112	
gag agc agc agc cgg aac cag gca gcc caa gct gcc aag cct gaa gac	443
Glu Ser Ser Ser Arg Asn Gln Ala Ala Gln Ala Ala Lys Pro Glu Asp	
113 118 123 128	
cct cgg agc cag ggc gtg gaa aga ttc ata cag gag tca aaa tta aaa	491
Pro Arg Ser Gln Gly Val Glu Arg Phe Ile Gln Glu Ser Lys Leu Lys	
129 134 139 144	
ata aac ctc ttt gag aaa gaa aag gaa atg aag aaa agc ccc acg tct	539
Ile Asn Leu Phe Glu Lys Glu Lys Glu Met Lys Lys Ser Pro Thr Ser	
145 150 155 160	
ctt aaa agg gag aca tac tac ctg tca gac agc ccc ttg ctg ggg ccc	587
Leu Lys Arg Glu Thr Tyr Tyr Leu Ser Asp Ser Pro Leu Leu Gly Pro	
161 166 171 176	
cct gtg ggt gag cct cgg ctc ttg gcc tcc tcc ccg gcc ctg ccc agc	635
Pro Val Gly Glu Pro Arg Leu Leu Ala Ser Ser Pro Ala Leu Pro Ser	
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Ser Gly Ala Gln Ala Arg Leu Thr Arg Ala Pro Gly Pro Pro His Ser	
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Ala His Ala Leu Pro Arg Glu Ser Cys Thr Ala His Ala Ala Ser Gln	
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Ala Ala Thr Gln Arg Lys Pro Gly Thr Lys Leu Leu Leu Pro Arg Ala	
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Ala Ser Val Arg Gly Arg Ser Ile Pro Gly Ala Ala Glu Lys Pro Lys	
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Lys Glu Ile Pro Ala Ser Pro Ser Arg Thr Lys Ile Pro Ala Glu Lys	
257 262 267 272	
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Glu Ser His Arg Asp Val Leu Pro Asp Lys Pro Ala Pro Gly Ala Val	
273 278 283 288	
 aat gtg ccg gcc gcc gga agc cac ttg ggc cag ggc aag cgg gcg atc	971
Asn Val Pro Ala Ala Gly Ser His Leu Gly Gln Gly Lys Arg Ala Ile	
289 294 299 304	
 cct gtt cca aac aag ttg ggg ctg aag aag acc ctg tta aaa gca ccc	1019
Pro Val Pro Asn Lys Leu Gly Leu Lys Lys Thr Leu Leu Lys Ala Pro	
305 310 315 320	
 ggc tct acc agc aat ctc gca agg aag tcc tcc tcg ggg cct gtt tgg	1067
Gly Ser Thr Ser Asn Leu Ala Arg Lys Ser Ser Ser Gly Pro Val Trp	
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Ser Gly Ala Ser Ser Ala Cys Thr Ser Pro Ala Val Gly Lys Ala Lys	
337 342 347 352	
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Ser Ser Glu Phe Ala Ser Ile Pro Ala Asn Ser Ser Arg Pro Leu Ser	
353 358 363 368	
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Asn Ile Ser Lys Ser Gly Arg Met Gly Pro Ala Met Leu Arg Pro Ala	
369 374 379 384	
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Leu Pro Ala Gly Pro Val Gly Ala Ser Ser Trp Gln Ala Lys Arg Val	
385 390 395 400	
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Asp Val Ser Glu Leu Ala Ala Glu Gln Leu Thr Ala Pro Pro Ser Ala	
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Ser Pro Thr Gln Pro Gln Thr Pro Glu Gly Gly Gly Gln Trp Leu Asn	
417 422 427 432	
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Ser Ser Cys Ala Trp Ser Glu Ser Ser Gln Leu Asn Lys Thr Arg Ser	
433 438 443 448	
 atc aga cgg cga gat tcc tgt cta aat tcc aag aca aag gtt atg cct	1451
Ile Arg Arg Arg Asp Ser Cys Leu Asn Ser Lys Thr Lys Val Met Pro	
449 454 459 464	
 act cct aca aat caa ttt aaa att cct aag ttt tct att ggt gac tcc	1499
Thr Pro Thr Asn Gln Phe Lys Ile Pro Lys Phe Ser Ile Gly Asp Ser	
465 470 475 480	
 ccg gac agc tca aca cca aag ctt tcg cgg gca cag cgg ccg cag tcg	1547

Pro Asp Ser Ser Thr	Pro Lys Leu Ser Arg	Ala Gln Arg Pro Gln Ser	
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tgc acg tca gtt ggc agg gtc act gtc cac agc acc ccg gtt aga cgc			1595
Cys Thr Ser Val Gly Arg Val Thr Val His Ser Thr Pro Val Arg Arg			
497	502	507	512
tca tct ggg cca gca cca caa agc ctg ctg agc gca cgg cgt gtg tca			1643
Ser Ser Gly Pro Ala Pro Gln Ser Leu Leu Ser Ala Arg Arg Val Ser			
513	518	523	528
gcc ttg ccc aca ccc gcc agc cgg cgc tgc tct ggc ctt cca ccg atg			1691
Ala Leu Pro Thr Pro Ala Ser Arg Arg Cys Ser Gly Leu Pro Pro Met			
529	534	539	544
acc ccc aaa acg atg ccc agg gcc gtg ggc tct ccc ctg tgt gtg cca			1739
Thr Pro Lys Thr Met Pro Arg Ala Val Gly Ser Pro Leu Cys Val Pro			
545	550	555	560
gct cgg aga cgt tcc tct gag ccc cgc aag aac tct gca atg agg gct			1787
Ala Arg Arg Arg Ser Ser Glu Pro Arg Lys Asn Ser Ala Met Arg Ala			
561	566	571	576
ctt ctt gta gat atc aaa ctg gaa cca ctc gcg gtc act cca gat gct			1835
Leu Leu Val Asp Ile Lys Leu Glu Pro Leu Ala Val Thr Pro Asp Ala			
577	582	587	592
gca agc cag ccc ctc att gac ctt cct ctc atc gac ttc tgc gat acc			1883
Ala Ser Gln Pro Leu Ile Asp Leu Pro Leu Ile Asp Phe Cys Asp Thr			
593	598	603	608
cca gaa gca cac gtg gct gta gga tct gaa agc agg cct ctg atc gac			1931
Pro Glu Ala His Val Ala Val Gly Ser Glu Ser Arg Pro Leu Ile Asp			
609	614	619	624
ctc atg aca aac act cca gac atg aat aaa aat gtg gcc aaa cct tca			1979
Leu Met Thr Asn Thr Pro Asp Met Asn Lys Asn Val Ala Lys Pro Ser			
625	630	635	640
ccg gtg gtg gga cag ctc ata gac ctg agc tcc cct ctg atc cag ctg			2027
Pro Val Val Gly Gln Leu Ile Asp Leu Ser Ser Pro Leu Ile Gln Leu			
641	646	651	656
agc cct gag gct gac aag gag aac gtg gat tcc cca ctc ctc aag ttc			2075
Ser Pro Glu Ala Asp Lys Glu Asn Val Asp Ser Pro Leu Leu Lys Phe			
657	662	667	672
taa gccg aaccaaattcc ttgccttga aagaacagcc cttaaagtgg tttcaaccct			2132
*			
673			
cagaaacaag ctttaggctg gtcgcagtgg cttacacttg taaccctaga acttgggagg			2192
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 atgcttcacc tgtccgcagc tccgcccgc ccacccccgg aagtgcggc gaccgcgcgg 240  
 ccctgccttt gttccgttgg gcgtccgcgg cgacggcggg aag atg gcg gcg gcg 295  
 Met Ala Ala Ala  
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 gga gcc ctg gaa cgg agc ttc gtg gag cta agc gga gct gag cgc gaa 343  
 Gly Ala Leu Glu Arg Ser Phe Val Glu Leu Ser Gly Ala Glu Arg Glu  
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 Arg Pro Arg His Phe Arg Glu Phe Thr Val Cys Ser Ile Gly Thr Ala

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Asn Ala Val Ala Gly Ala Val Lys Tyr Ser Glu Ser Ala Gly Gly Phe				
37	42	47	52	
tac tac gtg gag agt ggc aag ttg ttc tcc gta acc aga aac agg ttc				487
Tyr Tyr Val Glu Ser Gly Lys Leu Phe Ser Val Thr Arg Asn Arg Phe				
53	58	63	68	
att cat tgg aag acc tct gga gat aca ttg gag ctg atg gag gag tca				535
Ile His Trp Lys Thr Ser Gly Asp Thr Leu Glu Leu Met Glu Glu Ser				
69	74	79	84	
ctg gac ata aat ctg ttg aat aat gcc att cgc cta aaa ttc caa aat				583
Leu Asp Ile Asn Leu Leu Asn Asn Ala Ile Arg Leu Lys Phe Gln Asn				
85	90	95	100	
tgc agt gtt tta cct gga ggg gtt tat gtc tct gag act cag aat cgt				631
Cys Ser Val Leu Pro Gly Gly Val Tyr Val Ser Glu Thr Gln Asn Arg				
101	106	111	116	
gtg ata atc ttg atg tta acc aat caa aca gtg cac agg tta ctt tta				679
Val Ile Ile Leu Met Leu Thr Asn Gln Thr Val His Arg Leu Leu Leu				
117	122	127	132	
cca cac ccc tcc cgg atg tat agg agt gag ttg gta gtt gac agt cag				727
Pro His Pro Ser Arg Met Tyr Arg Ser Glu Leu Val Val Asp Ser Gln				
133	138	143	148	
atg cag tca ata ttc act gac att gga aaa gtt gat ttc aca gat cct				775
Met Gln Ser Ile Phe Thr Asp Ile Gly Lys Val Asp Phe Thr Asp Pro				
149	154	159	164	
tgc aac tat cag tta att cca gca gta cct gga ata tct cct aat tcc				823
Cys Asn Tyr Gln Leu Ile Pro Ala Val Pro Gly Ile Ser Pro Asn Ser				
165	170	175	180	
acc gcc tct aca gcc tgg ctc agc agt gat ggg gag gcc ctg ttt gcc				871
Thr Ala Ser Thr Ala Trp Leu Ser Ser Asp Gly Glu Ala Leu Phe Ala				
181	186	191	196	
tta oca tgt gct tct ggg gga atc ttt gtt ctt aag cta cct cct tat				919
Leu Pro Cys Ala Ser Gly Gly Ile Phe Val Leu Lys Leu Pro Pro Tyr				
197	202	207	212	
gac ata cct ggt atg gtg tca gtc gtg gaa ctg aaa cag agt tca gta				967
Asp Ile Pro Gly Met Val Ser Val Val Glu Leu Lys Gln Ser Ser Val				
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Met Gln Arg Leu Leu Thr Gly Trp Met Pro Thr Ala Ile Arg Gly Asp				
229	234	239	244	
cag tcg cct tca gat cgt ccc ctc agt ctt gct gtt cat tgt gtg gag				1063
Gln Ser Pro Ser Asp Arg Pro Leu Ser Leu Ala Val His Cys Val Glu				
245	250	255	260	

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His Asp Ala Phe Ile Phe Ala Leu Cys Gln Asp His Lys Leu Arg Met	
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Tyr Val Pro Val Lys Lys Asp Leu Arg Leu Thr Ala Gly Thr Gly His	
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aaa tta cgg ctt gct tat tcc ccc acc atg gga ctc tac ctg ggg ata	1255
Lys Leu Arg Leu Ala Tyr Ser Pro Thr Met Gly Leu Tyr Leu Gly Ile	
309 314 319 324	
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Tyr Met His Ala Pro Lys Arg Gly Gln Phe Cys Ile Phe Gln Leu Val	
325 330 335 340	
agc act gag agt aat cgc tat agt ctc gat cat att tct tca ctg ttc	1351
Ser Thr Glu Ser Asn Arg Tyr Ser Leu Asp His Ile Ser Ser Leu Phe	
341 346 351 356	
act tct cag gag aca ctg att gac ttt gcc tta act tcc acg gat atc	1399
Thr Ser Gln Glu Thr Leu Ile Asp Phe Ala Leu Thr Ser Thr Asp Ile	
357 362 367 372	
tggtgcc ctgtgg cat gat gct gag aac caa aca gta gtg aaa tac atc	1447
Trp Ala Leu Trp His Asp Ala Glu Asn Gln Thr Val Val Lys Tyr Ile	
373 378 383 388	
aac ttt gaa cat aat gtt gca ggt cag tgg aat cca gtt ttt atg cag	1495
Asn Phe Glu His Asn Val Ala Gly Gln Trp Asn Pro Val Phe Met Gln	
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Asn Pro His Thr Asn Met Val Cys Leu Leu Lys Lys Gly Tyr Leu Ser	
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Thr Leu Arg Thr Cys Ile Phe Lys His His Leu Asp Leu Gly His Asn				
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Ser Gln Ala Tyr Glu Ala Leu Thr Gln Ile Pro Asp Ser Ser Arg Gln				
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Val Gln Pro Val Ser Gly Ala Val Tyr Asp Arg Pro Gly Ala Ser Pro				
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Lys Arg Asn His Asp Gly Glu Cys Thr Ala Ala Pro Thr Asn Arg Gln				
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Arg Ile Arg Leu Thr Leu Ala Gln His Asp Pro Ser Ala Val Ala Val				
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 Glu Gln Gln Arg Gln Leu Lys Lys Gln Lys Asn Arg Ala Ala Ala Gln  
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 Arg Ser Arg Gln Lys His Thr Asp Lys Ala Asp Ala Leu His Gln Gln  
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*Abstract*



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Lys Trp Gln Asp Asp Leu Ala Arg Trp Lys Ser Arg Arg Arg Ser Val	
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Ser Gln Asp Leu Ile Lys Lys Glu Glu Glu Arg Lys Lys Met Glu Lys	
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Leu Leu Ala Gly Glu Asp Gly Thr Ser Glu Arg Arg Lys Ser Ile Lys	
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Thr Tyr Arg Glu Ile Val Gln Glu Lys Glu Arg Arg Glu Arg Glu Leu	
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His Glu Ala Tyr Lys Asn Ala Arg Ser Gln Glu Glu Ala Glu Gly Ile	
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Leu Gln Gln Tyr Ile Glu Arg Phe Thr Ile Ser Glu Ala Val Leu Glu	
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cgc ttg gag atg cca aaa att ctg gaa aga agc cat tca aca gag cca	1136
Arg Leu Glu Met Pro Lys Ile Leu Glu Arg Ser His Ser Thr Glu Pro	
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Asn Leu Ser Ser Phe Leu Asn Asp Pro Asn Pro Met Lys Tyr Leu Arg	
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Gln Gln Ser Leu Pro Pro Pro Lys Phe Thr Ala Thr Val Glu Thr Thr	
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Thr Leu Asn Leu Tyr Phe His Ile Gln Cys Phe Arg Cys Gly Ile Cys				
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 Met Ser Ser Asp Leu Val  
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 Ser Arg Leu Pro Thr Ile Tyr Arg Asn Ala His Asp Ile Lys Asn Lys  
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 Ser Glu Arg Lys Asp Ser Ser Gly Ser Val Ser Pro Asn Thr Leu Ser  
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 Gln Glu Glu Gly Asp Gln Ile Cys Leu Tyr His Ile Arg Lys Ser Cys  
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 Ser Phe Gln Asp Lys Cys His Arg Val His Phe His Leu Pro Tyr Arg  
 71 76 81 86  
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 tgg caa ttc ttg gat aga ggc aaa tgg gag gat ttg gac aac atg gaa 641  
 Trp Gln Phe Leu Asp Arg Gly Lys Trp Glu Asp Leu Asp Asn Met Glu

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Leu Ile Glu Glu Ala Tyr Cys Asn Pro Lys Ile Glu Arg Ile Leu Cys				
103	108	113	118	
tct gag tca gcc agt acc ttt cac tct cat tgt ctg aac ttt aac gcc				737
Ser Glu Ser Ala Ser Thr Phe His Ser His Cys Leu Asn Phe Asn Ala				
119	124	129	134	
atg act tac ggt gct acc cag gct cgc cgc ctc tcc acg gcc tcc tct				785
Met Thr Tyr Gly Ala Thr Gln Ala Arg Arg Leu Ser Thr Ala Ser Ser				
135	140	145	150	
gtc acc aaa cct cca cac ttc atc ctc acc act gac tgg att tgg tac				833
Val Thr Lys Pro Pro His Phe Ile Leu Thr Thr Asp Trp Ile Trp Tyr				
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Trp Ser Asp Glu Phe Gly Ser Trp Gln Glu Tyr Gly Arg Gln Gly Thr				
167	172	177	182	
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Val His Pro Val Thr Thr Val Ser Ser Ser Asp Val Glu Lys Ala Tyr				
183	188	193	198	
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Leu Ala Tyr Cys Thr Pro Gly Ser Asp Gly Gln Ala Ala Thr Leu Lys				
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Phe Gln Ala Gly Lys His Asn Tyr Glu Leu Asp Phe Lys Ala Phe Val				
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Thr Ser Tyr Gly Lys Gly Ser Tyr Phe Ala Arg Asp Ala Ala Tyr Ser	
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His His Tyr Ser Lys Ser Asp Thr Gln Thr His Thr Met Phe Leu Ala	
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Asn Ser Val Ser Asp Pro Ser Ile Phe Val Ile Phe Glu Lys His Gln	
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Val Tyr Pro Glu Tyr Val Ile Gln Tyr Thr Thr Ser Ser Lys Pro Ser	
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Glu Val Ile Ala Met Ile Lys Gly Leu Gln Val Leu Met Gly Arg Met				
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Glu Ser Val Phe Asn His Ala Ile Arg His Thr Val Tyr Ala Ala Leu				
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Arg Arg Ala Val Gly Pro Ser Ser Thr Gln Leu Tyr Met Val Arg Thr				
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Pro Trp Ile Leu Thr Asp His Ile Leu Glu Thr Lys Glu Ala Ser Met				
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Gly Arg Ile Thr Leu His Val Phe Trp Glu Leu Asn Tyr Asp Phe Leu	
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Thr Arg Tyr Leu Tyr Gly Glu Gly Asp Leu Asn Phe Ser Asp Asp Ser
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gga att tct ggt cta cgc aat cac atg act tct ctc aac ttg gac ttg      475
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caagggttaag cttcatctgc ttggtgtccc acagaacttg cacaagcagt tgttattggg	3434
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tgtgctgata cccaccgaca attcgacccc acacaaggag gatctaagca gcaagattaa	180
agaacaaaaa attgtgggtg atgaactttc taaccttaag aagaatagga aagtatatag	240
gcaacaacag aacagcaata tattctttct tgcagaccga acagaaatgc tgtctgagag	300
caagaatata ttggatgaac tgaaaaaaga ataccaagaa atagaaaact tagacaagac	360
caaatcaag aaatagtcaa cctgatttca cataaca atg tgt ggc att tgt tgt	415

## Met Cys Gly Ile Cys Cys

1

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Ser Val Asn Phe Ser Ala Glu His Phe Ser Gln Asp Leu Lys Glu Asp	
7 12 17 22	
tta cta tat aat ctt aaa cag cgg gga ccc aat agt agt aaa caa ttg	511
Leu Leu Tyr Asn Leu Lys Gln Arg Gly Pro Asn Ser Ser Lys Gln Leu	
23 28 33 38	
tta aag tct gat gtt aac tac cag tgt tta ttt tct gct cac gtc cta	559
Leu Lys Ser Asp Val Asn Tyr Gln Cys Leu Phe Ser Ala His Val Leu	
39 44 49 54	
cac ttg agg ggt gtt ttg act acc cag cct gtg gaa gat gaa aga ggc	607
His Leu Arg Gly Val Leu Thr Thr Gln Pro Val Glu Asp Glu Arg Gly	
55 60 65 70	
aat gtg ttt cta tgg aat gga gaa att ttt agt gga ata aag gtt gaa	655
Asn Val Phe Leu Trp Asn Gly Glu Ile Phe Ser Gly Ile Lys Val Glu	
71 76 81 86	
gct gaa gag aat gac act caa att ttg ttt aat tat ctt tcc tcc tgt	703
Ala Glu Glu Asn Asp Thr Gln Ile Leu Phe Asn Tyr Leu Ser Ser Cys	
87 92 97 102	
aag aat gaa tct gag att ttg tca ctc ttc tca gaa gta caa ggt ccc	751
Lys Asn Glu Ser Glu Ile Leu Ser Leu Phe Ser Glu Val Gln Gly Pro	
103 108 113 118	
tgg tca ttt ata tat tat caa gca tct agt cat tat tta tgg ttt ggt	799
Trp Ser Phe Ile Tyr Tyr Gln Ala Ser Ser His Tyr Leu Trp Phe Gly	
119 124 129 134	
agg gat ttt ttt ggt cgc cgt agc ttg ctt tgg cat ttt agt aat ttg	847
Arg Asp Phe Phe Gly Arg Arg Ser Leu Leu Trp His Phe Ser Asn Leu	
135 140 145 150	
ggc aag agt ttc tgc ctc tct tca gtt ggc acc caa aca tct gga ttg	895
Gly Lys Ser Phe Cys Leu Ser Ser Val Gly Thr Gln Thr Ser Gly Leu	
151 156 161 166	
gca aat cag tgg caa gaa gtt cca gca tct gga ctt ttc aga att gat	943
Ala Asn Gln Trp Gln Glu Val Pro Ala Ser Gly Leu Phe Arg Ile Asp	
167 172 177 182	
ctt aag tct act gtc att tcc aga tgc att att tta caa ctg tat cct	991
Leu Lys Ser Thr Val Ile Ser Arg Cys Ile Ile Leu Gln Leu Tyr Pro	
183 188 193 198	
tgg aaa tat att tct agg gag aat att att gaa gaa aat gtt aat agc	1039
Trp Lys Tyr Ile Ser Arg Glu Asn Ile Ile Glu Glu Asn Val Asn Ser	
199 204 209 214	
ctg agt caa att tca gca gac tta cca gca ttt gta tca gtg gta gca	1087
Leu Ser Gln Ile Ser Ala Asp Leu Pro Ala Phe Val Ser Val Val Ala	

215	220	225	230	
aat gaa gcc aaa ctg	tat ctt gaa aaa cct	gtt gtt cct tta aat atg		1135
Asn Glu Ala Lys Leu	Tyr Leu Glu Lys Pro	Val Val Pro Leu Asn Met		
231	236	241	246	
atg ttg cca caa gct	gca ttg gag act cat	tgc agt aat att tcc aat		1183
Met Leu Pro Gln Ala	Ala Leu Glu Thr His	Cys Ser Asn Ile Ser Asn		
247	252	257	262	
gtg cca cct aca aga	gag ata ctt caa gtc	ttt ctt act gat gta cac		1231
Val Pro Pro Thr Arg	Glu Ile Leu Gln Val	Phe Leu Thr Asp Val His		
263	268	273	278	
atg aag gaa gta att	cag cag ttc att gat	gtc ctg agt gta gca gtc		1279
Met Lys Glu Val Ile	Gln Gln Phe Ile Asp	Val Leu Ser Val Ala Val		
279	284	289	294	
aag aaa cgt gtc ttg	tgt tta cct agg gat	gaa aac ctg aca gca aat		1327
Lys Lys Arg Val Leu	Cys Leu Pro Arg Asp	Glu Asn Leu Thr Ala Asn		
295	300	305	310	
gaa gtt ttg aaa acg	tgt gat agg aaa gca	aat gtt gca atc ctg ttt		1375
Glu Val Leu Lys Thr	Cys Asp Arg Lys Ala	Asn Val Ala Ile Leu Phe		
311	316	321	326	
tct ggg ggc att gat	tcc atg gtt att gca	acc ctt gct gac cgt cat		1423
Ser Gly Gly Ile Asp	Ser Met Val Ile Ala	Thr Leu Ala Asp Arg His		
327	332	337	342	
att cct tta gat gaa	cca att gat ctt ctt	aat gta gct ttc ata gct		1471
Ile Pro Leu Asp Glu	Pro Ile Asp Leu Leu	Asn Val Ala Phe Ile Ala		
343	348	353	358	
gaa gaa aag acc atg	cca act acc ttt aac	aga gaa ggg aat aaa cag		1519
Glu Glu Lys Thr Met	Pro Thr Thr Phe Asn	Arg Glu Gly Asn Lys Gln		
359	364	369	374	
aaa aat aaa tgt gaa	ata cct tca gaa gaa	ttc tct aaa gat gtt gct		1567
Lys Asn Lys Cys Glu	Ile Pro Ser Glu Glu	Phe Ser Lys Asp Val Ala		
375	380	385	390	
gct gct gct gct gac	agt cct aat aaa cat	gtc agt gta cca gat cga		1615
Ala Ala Ala Ala Asp	Ser Pro Asn Lys His	Val Ser Val Pro Asp Arg		
391	396	401	406	
atc aca gga agg gcg	gga cta aag gaa cta	caa gct gtt agc cct tcc		1663
Ile Thr Gly Arg Ala	Gly Leu Lys Glu Leu	Gln Ala Val Ser Pro Ser		
407	412	417	422	
cga att tgg aat ttt	gtt gaa att aat gtt	tct atg gaa gaa ctg cag		1711
Arg Ile Trp Asn Phe	Val Glu Ile Asn Val	Ser Met Glu Glu Leu Gln		
423	428	433	438	
aaa tta aga aga act	cga ata tgt cac tta	att cgg cca ttg gat aca		1759
Lys Leu Arg Arg Thr	Arg Ile Cys His Leu	Ile Arg Pro Leu Asp Thr		
439	444	449	454	

gtt ttg gat gat agc att ggc tgt gca gtc tgg ttt gct tct aga gga	1807
Val Leu Asp Asp Ser Ile Gly Cys Ala Val Trp Phe Ala Ser Arg Gly	
455 460 465 470	
att ggt tgg tta gtg gcc cag gaa gga gtg aaa tcc tat cag agc aat	1855
Ile Gly Trp Leu Val Ala Gln Glu Gly Val Lys Ser Tyr Gln Ser Asn	
471 476 481 486	
gca aag gta gtt ctc act gga att ggt gca gat gag caa ctt gca ggt	1903
Ala Lys Val Val Leu Thr Gly Ile Gly Ala Asp Glu Gln Leu Ala Gly	
487 492 497 502	
tat tct cgt cat cgt gtc cgc ttt cag tcg cat ggg ctg gaa gga ttg	1951
Tyr Ser Arg His Arg Val Arg Phe Gln Ser His Gly Leu Glu Gly Leu	
503 508 513 518	
aat aag gaa ata atg atg gaa ctg ggt cga att tct tct aga aat ctt	1999
Asn Lys Glu Ile Met Met Glu Leu Gly Arg Ile Ser Ser Arg Asn Leu	
519 524 529 534	
ggg cgt gat gac aga gtt att ggt gat cat gga aaa gaa gca aga ttt	2047
Gly Arg Asp Asp Arg Val Ile Gly Asp His Gly Lys Glu Ala Arg Phe	
535 540 545 550	
cct ttc ctg gat gaa aat gtt gtc tcc ttt cta aat tct ctg ccg att	2095
Pro Phe Leu Asp Glu Asn Val Val Ser Phe Leu Asn Ser Leu Pro Ile	
551 556 561 566	
tgg gaa aaa gca aac ttg act tta ccc cga gga att ggt gaa aaa tta	2143
Trp Glu Lys Ala Asn Leu Thr Leu Pro Arg Gly Ile Gly Glu Lys Leu	
567 572 577 582	
ctt tta cgc ctt gca gct gtg gaa ctt ggt ctt aca gcc tct gct ctt	2191
Leu Leu Arg Leu Ala Ala Val Glu Leu Gly Leu Thr Ala Ser Ala Leu	
583 588 593 598	
ctg ccc aaa cgg gcc atg cag ttt gga tca aga att gca aaa atg gaa	2239
Leu Pro Lys Arg Ala Met Gln Phe Gly Ser Arg Ile Ala Lys Met Glu	
599 604 609 614	
aaa att aat gaa aag gca tct gat aaa tgt gga cgg ctc caa atc atg	2287
Lys Ile Asn Glu Lys Ala Ser Asp Lys Cys Gly Arg Leu Gln Ile Met	
615 620 625 630	
tcc tta gaa aat ctt tct att gaa aag gag act aaa ttg taa tgtgatt	2336
Ser Leu Glu Asn Leu Ser Ile Glu Lys Glu Thr Lys Leu *	
631 636 641	
cacaatgtaa caatataaaa ataagttttt atataattat ataaaagtaa gatactctgc	2396
tgctttacta ttgtataata tagtagtttt aaagttcatt tggttgaatt ttcatttttt	2456
cctgtcacag agcttctaaa accatggaat ttccttagtg atagggaata tcttttgttg	2516
ttcataataa gccccttttg atcacacctg agtttatgct aatgcggtga cttagggtga	2576

ggctctctaaa tagccttttaa cacctgcagc ttgggaggcc aaggcagagg gatctcttga 2636  
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Met Ile Leu Lys Leu Pro  
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ttt ctg aag aga aga gga ggg ggt ata gac cca act gtt aaa gag cgc 520  
Phe Leu Lys Arg Arg Gly Gly Gly Ile Asp Pro Thr Val Lys Glu Arg  
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Leu Trp Leu Thr Leu His Trp Pro Ser Asn Gln Pro Thr Gln Leu Val  
23 28 33 38  
tct agc tgt ttt gga ggt gaa ctg ttg caa tgg gat ctc act caa tct 616  
Ser Ser Cys Phe Gly Gly Glu Leu Leu Gln Trp Asp Leu Thr Gln Ser  
39 44 49 54  
tgg aga cgg aaa tac acc ctc ttc agt gcc tca tca gaa ggg caa aat 664  
Trp Arg Arg Lys Tyr Thr Leu Phe Ser Ala Ser Ser Glu Gly Gln Asn  
55 60 65 70  
cat tca aga att gtg ttt aat tta tgt cct tta caa aca gag gat gac 712  
His Ser Arg Ile Val Phe Asn Leu Cys Pro Leu Gln Thr Glu Asp Asp  
71 76 81 86

aaa cag ctg tta ctt tct aca tca atg gat aga gat gta aaa tgt tgg	760
Lys Gln Leu Leu Leu Ser Thr Ser Met Asp Arg Asp Val Lys Cys Trp	
87 92 97 102	
gac ata gcc acc ttg gag tgc agc tgg acc ctt cct tcc ctt ggt ggg	808
Asp Ile Ala Thr Leu Glu Cys Ser Trp Thr Leu Pro Ser Leu Gly Gly	
103 108 113 118	
ttt gca tac agc ctg gct ttc tct tct gtg gac ata ggc tct ttg gcc	856
Phe Ala Tyr Ser Leu Ala Phe Ser Ser Val Asp Ile Gly Ser Leu Ala	
119 124 129 134	
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Ile Gly Val Gly Asp Gly Met Ile Arg Val Trp Asn Thr Leu Ser Ile	
135 140 145 150	
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Lys Asn Asn Tyr Asp Val Lys Asn Phe Trp Gln Gly Val Lys Ser Lys	
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Val Thr Ala Leu Cys Trp His Pro Thr Lys Glu Gly Cys Leu Ala Phe	
167 172 177 182	
gga act gat gat gga aaa gtg gga ttg tat gac acc tac tcc aac aag	1048
Gly Thr Asp Asp Gly Lys Val Gly Leu Tyr Asp Thr Tyr Ser Asn Lys	
183 188 193 198	
cct cca cag att tct agc aca tat cat aag aag act gta tat acg tta	1096
Pro Pro Gln Ile Ser Ser Thr Tyr His Lys Lys Thr Val Tyr Thr Leu	
199 204 209 214	
gcc tgg ggg cca cca gta ccc ccc atg tca ctt gga gga gaa gga gac	1144
Ala Trp Gly Pro Pro Val Pro Pro Met Ser Leu Gly Gly Glu Gly Asp	
215 220 225 230	
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Arg Pro Ser Leu Ala Leu Tyr Ser Cys Gly Gly Glu Gly Ile Val Leu	
231 236 241 246	
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Gln His Asn Pro Trp Lys Leu Ser Gly Glu Ala Phe Asp Ile Asn Lys	
247 252 257 262	
ctc atc agg gac acc aat tca atc aaa tac aaa ttg cct gta cac aca	1288
Leu Ile Arg Asp Thr Asn Ser Ile Lys Tyr Lys Leu Pro Val His Thr	
263 268 273 278	
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Glu Ile Ser Trp Lys Ala Asp Gly Lys Ile Met Ala Leu Gly Asn Glu	
279 284 289 294	
gat gga tca ata gaa ata ttt cag att ccc aac ctg aaa ctg atc tgt	1384
Asp Gly Ser Ile Glu Ile Phe Gln Ile Pro Asn Leu Lys Leu Ile Cys	
295 300 305 310	
act atc caa cag cat cac aag ctt gtg aat acc att agc tgg cat cat	1432

Thr Ile Gln Gln His His Lys Leu Val Asn Thr Ile Ser Trp His His	
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Glu His Gly Ser Gln Pro Glu Leu Ser Tyr Leu Met Ala Ser Gly Ser	
327 332 337 342	
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Asn Asn Ala Val Ile Tyr Val His Asn Leu Lys Thr Val Ile Glu Ser	
343 348 353 358	
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Ser Pro Glu Ser Pro Val Thr Ile Thr Glu Pro Tyr Arg Thr Leu Ser	
359 364 369 374	
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Gly His Thr Ala Lys Ile Thr Ser Val Ala Trp Ser Pro His His Asp	
375 380 385 390	
gga agg ctg gta tct gct tcc tat gat ggt aca gcc cag gtg tgg gat	1672
Gly Arg Leu Val Ser Ala Ser Tyr Asp Gly Thr Ala Gln Val Trp Asp	
391 396 401 406	
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Ala Leu Arg Glu Glu Pro Leu Cys Asn Phe Arg Gly His Gln Gly Arg	
407 412 417 422	
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Leu Leu Cys Val Ala Trp Ser Pro Leu Asp Pro Asp Cys Ile Tyr Ser	
423 428 433 438	
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Gly Ala Asp Asp Phe Cys Val His Lys Trp Leu Thr Ser Met Gln Asp	
439 444 449 454	
cat tcc cgg cct cct caa ggc aaa aaa agt att gaa ttg gag aaa aaa	1864
His Ser Arg Pro Pro Gln Gly Lys Lys Ser Ile Glu Leu Glu Lys Lys	
455 460 465 470	
cgg ctc tct caa cct aag gca aag ccc aaa aag aag aaa aag ccc acc	1912
Arg Leu Ser Gln Pro Lys Ala Lys Pro Lys Lys Lys Lys Lys Pro Thr	
471 476 481 486	
ttg aga act cct gta aag ctg gaa tcg att gat gga aat gaa gaa gaa	1960
Leu Arg Thr Pro Val Lys Leu Glu Ser Ile Asp Gly Asn Glu Glu Glu	
487 492 497 502	
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Ser Met Lys Glu Asn Ser Gly Pro Val Glu Asn Gly Val Ser Asp Gln	
503 508 513 518	
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Glu Gly Glu Glu Gln Ala Arg Glu Pro Glu Leu Pro Cys Gly Leu Ala	
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Pro Ala Val Ser Arg Glu Pro Val Ile Cys Thr Pro Val Ser Ser Gly	

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aag gag cca cca aaa gag aag cca gaa acc tta atc aag aag aga aaa	2200			
Lys Glu Pro Pro Lys Glu Lys Pro Glu Thr Leu Ile Lys Lys Arg Lys				
567	572	577	582	
gct cgt tcc ttg ctt ccc ctg agt aca agc ctg gac cac aga tcc aaa	2248			
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583	588	593	598	
gag gag ctt cat cag gac tgt ttg gta cta gca act gca aag cac tcc	2296			
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599	604	609	614	
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ctg ggg ctt ttc aca gac agg gct acc ctg tat aga atg att gat att	2392			
Leu Gly Leu Phe Thr Asp Arg Ala Thr Leu Tyr Arg Met Ile Asp Ile				
631	636	641	646	
gaa gga aaa ggt cac tta gaa aat ggc cac cct gag tta ttt cac cag	2440			
Glu Gly Lys Gly His Leu Glu Asn Gly His Pro Glu Leu Phe His Gln				
647	652	657	662	
ctt atg ctt tgg aaa ggg gat ctc aaa ggt gtt ctc cag act gca gca	2488			
Leu Met Leu Trp Lys Gly Asp Leu Lys Gly Val Leu Gln Thr Ala Ala				
663	668	673	678	
gaa aga ggg gag ctg aca gac aac ctt gtg gct atg gca cca gca gct	2536			
Glu Arg Gly Glu Leu Thr Asp Asn Leu Val Ala Met Ala Pro Ala Ala				
679	684	689	694	
ggc tac cat gtg tgg cta tgg gct gtg gaa gct ttt gcc aaa cag ctg	2584			
Gly Tyr His Val Trp Leu Trp Ala Val Glu Ala Phe Ala Lys Gln Leu				
695	700	705	710	
tgt ttt cag gat cag tat gtc aag gct gct tct cac cta ctt tcc atc	2632			
Cys Phe Gln Asp Gln Tyr Val Lys Ala Ala Ser His Leu Leu Ser Ile				
711	716	721	726	
cac aaa gtg tat gaa gcg gtg gag ctg ctc aag tca aac cat ttt tac	2680			
His Lys Val Tyr Glu Ala Val Glu Leu Leu Lys Ser Asn His Phe Tyr				
727	732	737	742	
agg gaa gct att gcg att gcc aag gcc cgg ctg cgc ccg gag gac cca	2728			
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743	748	753	758	
gtc ctg aag gac ttg tac ctc agc tgg gga acc gtc cta gaa aga gat	2776			
Val Leu Lys Asp Leu Tyr Leu Ser Trp Gly Thr Val Leu Glu Arg Asp				
759	764	769	774	



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Gly His Tyr Ala Val Ala Ala Lys Cys Tyr Leu Gly Ala Thr Cys Ala	
775 780 785 790	
tat gat gca gcc aaa gtt ttg gcc aaa aag ggg gat gcg gca tca ctt	2872
Tyr Asp Ala Ala Lys Val Leu Ala Lys Lys Gly Asp Ala Ala Ser Leu	
791 796 801 806	
aga acg gct gca gag ttg gct gcc atc gta gga gag gat gag ttg tct	2920
Arg Thr Ala Ala Glu Leu Ala Ala Ile Val Gly Glu Asp Glu Leu Ser	
807 812 817 822	
gct tcc ctg gct ctc aga tgt gcc caa gag ctg ctt ctg gcc aac aac	2968
Ala Ser Leu Ala Leu Arg Cys Ala Gln Glu Leu Leu Leu Ala Asn Asn	
823 828 833 838	
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Trp Val Gly Ala Gln Glu Ala Leu Gln Leu His Glu Ser Leu Gln Gly	
839 844 849 854	
cag aga ttg gtg ttt tgc ctt ctg gag cta ctg tcc agg cat ctg gag	3064
Gln Arg Leu Val Phe Cys Leu Leu Glu Leu Leu Ser Arg His Leu Glu	
855 860 865 870	
gaa aag cag ctt tca gag ggc aaa agc tcc tcc tct tac cac act tgg	3112
Glu Lys Gln Leu Ser Glu Gly Lys Ser Ser Ser Ser Tyr His Thr Trp	
871 876 881 886	
aac acg ggc acc gaa ggg cct ttc gtg gag agg gtg act gca gtg tgg	3160
Asn Thr Gly Thr Glu Gly Pro Phe Val Glu Arg Val Thr Ala Val Trp	
887 892 897 902	
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Lys Ser Ile Phe Ser Leu Asp Thr Pro Glu Gln Tyr Gln Glu Ala Phe	
903 908 913 918	
cag aag ctg cag aac atc aag tac cca tct gct aca aat aac aca cct	3256
Gln Lys Leu Gln Asn Ile Lys Tyr Pro Ser Ala Thr Asn Asn Thr Pro	
919 924 929 934	
gcc aaa cag ctc ctg ctt cac att tgc cat gac ttg acc ctg gca gtg	3304
Ala Lys Gln Leu Leu Leu His Ile Cys His Asp Leu Thr Leu Ala Val	
935 940 945 950	
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Leu Ser Gln Gln Met Ala Ser Trp Asp Glu Ala Val Gln Ala Leu Leu	
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cgg gcg gtg gtc cgg agc tat gac tca ggg agc ttc acc atc atg cag	3400
Arg Ala Val Val Arg Ser Tyr Asp Ser Gly Ser Phe Thr Ile Met Gln	
967 972 977 982	
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Glu Val Tyr Ser Ala Phe Leu Pro Asp Gly Cys Asp His Leu Arg Asp	
983 988 993 998	

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Lys Leu Gly Asp His Gln Ser Pro Ala Thr Pro Ala Phe Lys Ser Leu	
999 1004 1009 1014	
gag gcc ttt ttt ctt tat ggg cgt ctg tat gaa ttc tgg tgg tct ctc	3544
Glu Ala Phe Phe Leu Tyr Gly Arg Leu Tyr Glu Phe Trp Trp Ser Leu	
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Ser Arg Pro Cys Pro Asn Ser Ser Val Trp Val Arg Ala Gly His Arg	
1031 1036 1041 1046	
aca ctc tct gtt gag cca agc cag cag tta gac act gcc agc act gaa	3640
Thr Leu Ser Val Glu Pro Ser Gln Gln Leu Asp Thr Ala Ser Thr Glu	
1047 1052 1057 1062	
gaa acg gac cct gaa act tct cag cca gag cca aac agg cct tca gaa	3688
Glu Thr Asp Pro Glu Thr Ser Gln Pro Glu Pro Asn Arg Pro Ser Glu	
1063 1068 1073 1078	
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Leu Asp Leu Arg Leu Thr Glu Glu Gly Glu Arg Met Leu Ser Thr Phe	
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Lys Glu Leu Phe Ser Glu Lys His Ala Ser Leu Gln Asn Ser Gln Arg	
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Thr Val Ala Glu Val Gln Glu Thr Leu Ala Glu Met Ile Arg Gln His	
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Gln Lys Ser Gln Leu Cys Lys Ser Thr Ala Asn Gly Pro Asp Lys Asn	
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gaa ccg gaa gta gaa gca gag cag ccc ctc tgc agt tct cag agc cag	3928
Glu Pro Glu Val Glu Ala Glu Gln Pro Leu Cys Ser Ser Gln Ser Gln	
1143 1148 1153 1158	
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Cys Lys Glu Glu Lys Asn Glu Pro Leu Ser Leu Pro Glu Leu Thr Lys	
1159 1164 1169 1174	
agg ctt acc gag gca aat cag aga atg gca aaa ttt cct gag agc att	4024
Arg Leu Thr Glu Ala Asn Gln Arg Met Ala Lys Phe Pro Glu Ser Ile	
1175 1180 1185 1190	
aag gcc tgg ccc ttc cca gat gtg ctg gag tgc tgc ctc gtc ctg ctt	4072
Lys Ala Trp Pro Phe Pro Asp Val Leu Glu Cys Cys Leu Val Leu Leu	
1191 1196 1201 1206	
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Leu Ile Arg Ser His Phe Pro Gly Cys Leu Ala Gln Glu Met Gln Gln	
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Gln	Ala	Gln	Glu	Leu	Leu	Gln	Lys	Tyr	Gly	Asn	Thr	Lys	Thr	Tyr	Arg		
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aga	cac	tgc	cag	acc	ttc	tgt	atg	tga	at	ttt	cac	ac	cctt	ga	agaa	actg	4220
Arg	His	Cys	Gln	Thr	Phe	Cys	Met	*									
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					Met												
					1												
ccc cac ttg	ttg gtg act	ttc agg gat	gtg gcc att	gac ttc tct	cag												166

Pro	His	Leu	Leu	Val	Thr	Phe	Arg	Asp	Val	Ala	Ile	Asp	Phe	Ser	Gln	
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Glu	Glu	Trp	Glu	Cys	Leu	Asp	Pro	Ala	Gln	Arg	Asp	Leu	Tyr	Arg	Asp	
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Val	Met	Leu	Glu	Asn	Tyr	Ser	Asn	Leu	Ile	Ser	Leu	Asp	Leu	Glu	Ser	
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agt tgt gtg acc aaa aag tta tct cca gaa aag gaa att tat gaa atg																310
Ser	Cys	Val	Thr	Lys	Lys	Leu	Ser	Pro	Glu	Lys	Glu	Ile	Tyr	Glu	Met	
50					55					60					65	
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Glu	Ser	Leu	Gln	Trp	Glu	Asn	Met	Gly	Lys	Arg	Ile	Asn	His	His	Leu	
66					71					76					81	
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Ser	Ile	Gln	Trp	Ser	Trp	Arg	Gln	Tyr	Gly	Val	Gln	Arg	Gln	Leu	Arg	
82					87					92					97	
ggg tca agt aag caa gtc aga agg gct tta cat gtg tgt caa aat tac																454
Gly	Ser	Ser	Lys	Gln	Val	Arg	Arg	Ala	Leu	His	Val	Cys	Gln	Asn	Tyr	
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Leu	*															
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Met Lys Met Thr Gly Asp Phe Glu Glu Cys Leu Lys Asp Ser Pro Arg  
1 5 10 15  
ttc agg gca gct ttg gaa gaa gta gaa ggt gat gtg gca gaa ttg gaa 156  
Phe Arg Ala Ala Leu Glu Glu Val Glu Gly Asp Val Ala Glu Leu Glu  
17 22 27 32

cta aaa ctt gat aag ctt gtg aaa ctt ggg att gca atg att gat act	204
Leu Lys Leu Asp Lys Leu Val Lys Leu Gly Ile Ala Met Ile Asp Thr	
33 38 43 48	
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Gly Lys Ala Phe Cys Val Ala Asn Lys Gln Phe Met Asn Gly Ile Arg	
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Asp Leu Ala Gln Tyr Ser Ser Asn Asp Ala Val Val Glu Thr Ser Leu	
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acc aag ttt tct gac agt ctt caa gaa atg ata aat ttt cac aca atc	348
Thr Lys Phe Ser Asp Ser Leu Gln Glu Met Ile Asn Phe His Thr Ile	
81 86 91 96	
ctg ttg cca aac tca gag atc aat tta agg cac agc ttc agt aac ttt	396
Leu Leu Pro Asn Ser Glu Ile Asn Leu Arg His Ser Phe Ser Asn Phe	
97 102 107 112	
gtt aaa gaa gat ctt aga aaa ttc aaa gat gcc aag aag caa ttt gaa	444
Val Lys Glu Asp Leu Arg Lys Phe Lys Asp Ala Lys Lys Gln Phe Glu	
113 118 123 128	
aaa gtc agt gaa gaa aaa gaa aat gcg tta gta aaa aat gcc caa gta	492
Lys Val Ser Glu Glu Lys Glu Asn Ala Leu Val Lys Asn Ala Gln Val	
129 134 139 144	
caa aga aac aaa caa cat gaa gtt gaa gaa gcc acc aac att ctg aca	540
Gln Arg Asn Lys Gln His Glu Val Glu Glu Ala Thr Asn Ile Leu Thr	
145 150 155 160	
gca aca aga aaa tgt ttc cga cac ata gcc ctc gat tat gtg ctt cag	588
Ala Thr Arg Lys Cys Phe Arg His Ile Ala Leu Asp Tyr Val Leu Gln	
161 166 171 176	
att aat gtt ctt caa tca aaa agg aga tca gaa atc cta aaa tca atg	636
Ile Asn Val Leu Gln Ser Lys Arg Arg Ser Glu Ile Leu Lys Ser Met	
177 182 187 192	
ttg tca ttt atg tat gcc cat ttg gcc ttc ttt cat caa gga tat gat	684
Leu Ser Phe Met Tyr Ala His Leu Ala Phe Phe His Gln Gly Tyr Asp	
193 198 203 208	
ctg ttt agt gaa ctt gga ccc tac atg aag gat ctt ggt gca cag ttg	732
Leu Phe Ser Glu Leu Gly Pro Tyr Met Lys Asp Leu Gly Ala Gln Leu	
209 214 219 224	
gat cga ctg gtt gtg gat gca gca aag gag aaa aga gaa atg gag caa	780
Asp Arg Leu Val Val Asp Ala Ala Lys Glu Lys Arg Glu Met Glu Gln	
225 230 235 240	
aaa cat tcc acc att caa caa aag gat ttc tcc agt gat gat tct aag	828
Lys His Ser Thr Ile Gln Gln Lys Asp Phe Ser Ser Asp Asp Ser Lys	
241 246 251 256	
tta gaa tat aac gta gat gct gca aat ggc ata gtt atg gaa gga tat	876

Leu	Glu	Tyr	Asn	Val	Asp	Ala	Ala	Asn	Gly	Ile	Val	Met	Glu	Gly	Tyr		
257					262					267					272		
ctg	ttc	aaa	cga	gcc	agc	aat	gcc	ttc	aaa	act	tgg	aac	agg	cgc	tgg	924	
Leu	Phe	Lys	Arg	Ala	Ser	Asn	Ala	Phe	Lys	Thr	Trp	Asn	Arg	Arg	Trp		
273					278					283					288		
ttt	tca	ata	cag	aat	aat	cag	ttg	gtt	tac	cag	aaa	aaa	ttt	aag	gat	972	
Phe	Ser	Ile	Gln	Asn	Asn	Gln	Leu	Val	Tyr	Gln	Lys	Lys	Phe	Lys	Asp		
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aat	ccg	act	gtg	gta	gtt	gaa	gac	ctc	agg	ctt	tgc	aca	gtg	aaa	cat	1020	
Asn	Pro	Thr	Val	Val	Val	Glu	Asp	Leu	Arg	Leu	Cys	Thr	Val	Lys	His		
305					310					315					320		
tgt	gaa	gac	ata	gag	cga	cga	ttc	tgc	ttt	gag	gtg	gtc	tcg	cca	aca	1068	
Cys	Glu	Asp	Ile	Glu	Arg	Arg	Phe	Cys	Phe	Glu	Val	Val	Ser	Pro	Thr		
321					326					331					336		
aaa	agt	tgc	atg	ctc	cag	gca	gat	tcc	gaa	aag	ctg	cgc	cag	gca	tgg	1116	
Lys	Ser	Cys	Met	Leu	Gln	Ala	Asp	Ser	Glu	Lys	Leu	Arg	Gln	Ala	Trp		
337					342					347					352		
att	aag	gct	gtt	cag	acc	agt	att	gct	act	gct	tat	aga	gag	aag	ggc	1164	
Ile	Lys	Ala	Val	Gln	Thr	Ser	Ile	Ala	Thr	Ala	Tyr	Arg	Glu	Lys	Gly		
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Asp	Glu	Ser	Glu	Lys	Leu	Asp	Lys	Lys	Ser	Ser	Pro	Ser	Thr	Gly	Ser		
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cta	gat	tct	gga	aat	gag	tcc	aaa	gag	aaa	tta	ttg	aaa	gga	gaa	agt	1260	
Leu	Asp	Ser	Gly	Asn	Glu	Ser	Lys	Glu	Lys	Leu	Leu	Lys	Gly	Glu	Ser		
385					390					395					400		
gcg	ctt	cag	cgg	gtc	cag	tgt	atc	cct	ggc	aat	gcc	agc	tgt	tgt	gac	1308	
Ala	Leu	Gln	Arg	Val	Gln	Cys	Ile	Pro	Gly	Asn	Ala	Ser	Cys	Cys	Asp		
401					406					411					416		
tgt	ggc	ctg	gca	gat	cca	cgg	tgg	gcc	agc	atc	aac	ctg	ggc	atc	acc	1356	
Cys	Gly	Leu	Ala	Asp	Pro	Arg	Trp	Ala	Ser	Ile	Asn	Leu	Gly	Ile	Thr		
417					422					427					432		
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Ser	Lys	Val	Arg	Ser	Leu	Thr	Leu	Asp	Thr	Trp	Glu	Pro	Glu	Leu	Leu		
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Lys	Leu	Met	Cys	Glu	Leu	Gly	Asn	Asp	Val	Ile	Asn	Arg	Val	Tyr	Glu		
465					470					475					480		
gct	aat	gtg	gaa	aaa	atg	gga	ata	aag	aaa	ccc	caa	cca	gga	caa	aga	1548	
Ala	Asn	Val	Glu	Lys	Met	Gly	Ile	Lys	Lys	Pro	Gln	Pro	Gly	Gln	Arg		

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Gln Glu Lys Glu Ala Tyr Ile Arg Ala Lys Tyr Val Glu Arg Lys Phe				
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gtg gat aaa tat tct ata tca tta tca cct cct gag cag caa aaa aag				1644
Val Asp Lys Tyr Ser Ile Ser Leu Ser Pro Pro Glu Gln Gln Lys Lys				
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ttt gtc tct aaa agt tct gaa gaa aag agg ctg agc att tct aaa ttt				1692
Phe Val Ser Lys Ser Ser Glu Glu Lys Arg Leu Ser Ile Ser Lys Phe				
529	534	539	544	
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Gly Pro Gly Asp Gln Val Arg Ala Ser Ala Gln Ser Ser Val Arg Ser				
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aat gac agt gga att cag cag agc tct gat gat gga aga gaa tct tta				1788
Asn Asp Ser Gly Ile Gln Gln Ser Ser Asp Asp Gly Arg Glu Ser Leu				
561	566	571	576	
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Pro Ser Thr Val Ser Ala Asn Ser Leu Tyr Glu Pro Glu Gly Glu Arg				
577	582	587	592	
caa gat tct tct atg ttt ctt gac tcg aaa cat ctt aat cca gga ctt				1884
Gln Asp Ser Ser Met Phe Leu Asp Ser Lys His Leu Asn Pro Gly Leu				
593	598	603	608	
cag ctt tat agg gcg tca tat gaa aaa aac ctt cct aaa atg gct gag				1932
Gln Leu Tyr Arg Ala Ser Tyr Glu Lys Asn Leu Pro Lys Met Ala Glu				
609	614	619	624	
gct ttg gct cat ggt gca gac gtg aac tgg gcc aat tca gag gaa aac				1980
Ala Leu Ala His Gly Ala Asp Val Asn Trp Ala Asn Ser Glu Glu Asn				
625	630	635	640	
aaa gcg aca cca ctt att cag gct gta tta ggg ggc tct ttg gtg acg				2028
Lys Ala Thr Pro Leu Ile Gln Ala Val Leu Gly Gly Ser Leu Val Thr				
641	646	651	656	
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Cys Glu Phe Leu Leu Gln Asn Gly Ala Asn Val Asn Gln Arg Asp Val				
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caa ggg cgg gga cca ttg cac cat gcc acc gtc tta ggg cac aca ggg				2124
Gln Gly Arg Gly Pro Leu His His Ala Thr Val Leu Gly His Thr Gly				
673	678	683	688	
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Gln Val Cys Leu Phe Leu Lys Arg Gly Ala Asn Gln His Ala Thr Asp				
689	694	699	704	
gaa gaa ggg aaa gac cct ttg agc ata gct gtg gaa gca gcc aat gct				2220
Glu Glu Gly Lys Asp Pro Leu Ser Ile Ala Val Glu Ala Ala Asn Ala				
705	710	715	720	



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Asp Ile Val Thr Leu Leu Arg Leu Ala Arg Met Asn Glu Glu Met Arg	
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Glu Ser Glu Gly Leu Tyr Gly Gln Pro Gly Asp Glu Thr Tyr Gln Asp	
737 742 747 752	
ata ttt cgt gat ttt tcc caa atg gca tcc aat aat cca gag aaa cta	2364
Ile Phe Arg Asp Phe Ser Gln Met Ala Ser Asn Asn Pro Glu Lys Leu	
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ttccaaagta agaaatcaca tacgcttacg ttttactatt caattcaatc ctccctccca	4006
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 <212> DNA  
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actagtccag tgtggtggaa ttgcggtcgc gtagtgcggc gctgtttaaa g atg gcg	117

Met Ala  
1

gcg gag gaa cct cag cag cag aag cag gag ccg ctg ggc agc gac tcc Ala Glu Glu Pro Gln Gln Gln Lys Gln Glu Pro Leu Gly Ser Asp Ser 3 8 13 18	165
gaa ggt gtt aac tgt ctg gcc tat gat gaa gcc atc atg gct cag cag Glu Gly Val Asn Cys Leu Ala Tyr Asp Glu Ala Ile Met Ala Gln Gln 19 24 29 34	213
gac cga att cag caa gag att gct gtg cag aac cct ctg gtg tca gag Asp Arg Ile Gln Gln Glu Ile Ala Val Gln Asn Pro Leu Val Ser Glu 35 40 45 50	261
cgg ctg gag ctc tcg gtc cta tac aag gag tat gct gaa gat gac aac Arg Leu Glu Leu Ser Val Leu Tyr Lys Glu Tyr Ala Glu Asp Asp Asn 51 56 61 66	309
atc tat caa cag aag atc aag gac ctc cac aaa aag tac tcg tac atc Ile Tyr Gln Gln Lys Ile Lys Asp Leu His Lys Lys Tyr Ser Tyr Ile 67 72 77 82	357
cgc aag acc agg cct gac gcc aac tgt ttc tat cgg gct ttc gga ttc Arg Lys Thr Arg Pro Asp Gly Asn Cys Phe Tyr Arg Ala Phe Gly Phe 83 88 93 98	405
tcc cac ttg gag gca ctg ctg gat gac agc aag gag ttg cag cgg ttc Ser His Leu Glu Ala Leu Leu Asp Asp Ser Lys Glu Leu Gln Arg Phe 99 104 109 114	453
aag gct gtg tct gcc aag agc aag gaa gac ctg gtg tcc cag gcc ttc Lys Ala Val Ser Ala Lys Ser Lys Glu Asp Leu Val Ser Gln Gly Phe 115 120 125 130	501
act gaa ttc aca att gag gat ttc cac aac acg ttc atg gac ctg att Thr Glu Phe Thr Ile Glu Asp Phe His Asn Thr Phe Met Asp Leu Ile 131 136 141 146	549
gag cag gtg gag aag cag acc tct gtc gcc gac ctg ctg gcc tcc ttc Glu Gln Val Glu Lys Gln Thr Ser Val Ala Asp Leu Leu Ala Ser Phe 147 152 157 162	597
aat gac cag agc acc tcc gac tac ctt gtg gtc tac ctg cgg ctg ctc Asn Asp Gln Ser Thr Ser Asp Tyr Leu Val Val Tyr Leu Arg Leu Leu 163 168 173 178	645
acc tcg ggc tac ctg cag cgc gag agc aag ttc ttc gag cac ttc atc Thr Ser Gly Tyr Leu Gln Arg Glu Ser Lys Phe Phe Glu His Phe Ile 179 184 189 194	693
gag ggt gga cgg act gtc aag gag ttc tgc cag cag gag gtg gag ccc Glu Gly Gly Arg Thr Val Lys Glu Phe Cys Gln Gln Glu Val Glu Pro 195 200 205 210	741
atg tgc aag gag agc gac cac atc cac atc att gcg ctg gcc cag gcc Met Cys Lys Glu Ser Asp His Ile His Ile Ile Ala Leu Ala Gln Ala 215 220 225 230 235 240 245 250	789

211	216	221	226	
ctc agc gtg tcc atc	cag gtg gag tac atg	gac cgc ggc gag ggc ggc		837
Leu Ser Val Ser Ile	Gln Val Glu Tyr Met	Asp Arg Gly Glu Gly Gly		
227	232	237	242	
acc acc aat ccg cac	atc ttc cct gag ggc	tcc gag ccc aag gtc tac		885
Thr Thr Asn Pro His	Ile Phe Pro Glu Gly	Ser Glu Pro Lys Val Tyr		
243	248	253	258	
ctt ctc tac cgg cct	gga cac tac gat atc	ctc tac aaa tag ggctggc		934
Leu Leu Tyr Arg Pro	Gly His Tyr Asp Ile	Leu Tyr Lys *		
259	264	269		
tocagccgc tgctgcctg ctgccccct ctgccaggcg ctagacatgt acagaggttt				994
ttctgtggtt gtaaattggc ctatttcacc cccttcttcc tgtcacatga cccccccccc				1054
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ttaaaaacat ttagtggtga	tatttatgaa	aggaaatgat	tacttttttt	ottgactctt 180
gtagaggaac ttaaattggt	tgaaattgtg	actcagttta	ctctgtatcc	attcattccc 240
agaaacaagc cgcattttct	cttggggaga	ctgataat	aaaagggttg	ttgtgtcaga 300
aacattccca gcttcatcac	caaccctttc	cttcacctc	tgcccaactgg	agaccactta 360
catccogaag cggacgcggc	agctgaagtc	aggaaaccat	gcatcacatt	agcaggagcc 420
aactgcagac tttaaactcc	gttcaacatg	tggatgcggc	agagaa	atg acc tgt 475
			Met Thr Cys	
			1	
cca gac aag ccg ggg	cag ctc ata aac	tgg ttc atc	tgc tcc ctg	tgc 523
Pro Asp Lys Pro Gly	Gln Leu Ile Asn	Trp Phe Ile	Cys Ser Leu	Cys
4 /	9	14	19	
gtc ccg ccg gtg cgt	aag ctc tgg	agc agc ccg	cgt cca	agg acc ccg 571
Val Pro Arg Val Arg	Lys Leu Trp	Ser Ser Arg	Arg Pro	Arg Thr Arg

20	25	30	35	
aga aac ctt ctg ctg ggc act gcg tgt gcc atc tac ttg ggc ttc ctg				619
Arg Asn Leu Leu Leu Gly Thr Ala Cys Ala Ile Tyr Leu Gly Phe Leu				
36	41	46	51	
gtg agc cag gtg ggg agg gcc tct ctc cag cat gga cag gcg gct gag				667
Val Ser Gln Val Gly Arg Ala Ser Leu Gln His Gly Gln Ala Ala Glu				
52	57	62	67	
aag ggg cca cat cgc agc cgc gac acc gcc gag cca tcc ttc cct gag				715
Lys Gly Pro His Arg Ser Arg Asp Thr Ala Glu Pro Ser Phe Pro Glu				
68	73	78	83	
ata ccc ctg gat ggt acc ctg gcc cct cca gag tcc cag ggc aat ggg				763
Ile Pro Leu Asp Gly Thr Leu Ala Pro Pro Glu Ser Gln Gly Asn Gly				
84	89	94	99	
tcc act ctg cag ccc aat gtg gtg tac att acc cta cgc tcc aag cgc				811
Ser Thr Leu Gln Pro Asn Val Val Tyr Ile Thr Leu Arg Ser Lys Arg				
100	105	110	115	
agc aag ccg gcc aat atc cgt ggc acc gtg aag ccc aag cgc agg aaa				859
Ser Lys Pro Ala Asn Ile Arg Gly Thr Val Lys Pro Lys Arg Arg Lys				
116	121	126	131	
aag cat gca gtg gca tcg gct gcc cca ggg cag gag gct ttg gtc gga				907
Lys His Ala Val Ala Ser Ala Ala Pro Gly Gln Glu Ala Leu Val Gly				
132	137	142	147	
cca tcc ctt cag ccg cag gaa gcg gca agg gaa gct gat gct gta gca				955
Pro Ser Leu Gln Pro Gln Glu Ala Ala Arg Glu Ala Asp Ala Val Ala				
148	153	158	163	
cct ggg tac gct cag gga gca aac ctg gtt aag att gga gag cga ccc				1003
Pro Gly Tyr Ala Gln Gly Ala Asn Leu Val Lys Ile Gly Glu Arg Pro				
164	169	174	179	
tgg agg ttg gtg cgg ggt ccg gga gtg cga gcc ggg ggc cca gac ttc				1051
Trp Arg Leu Val Arg Gly Pro Gly Val Arg Ala Gly Gly Pro Asp Phe				
180	185	190	195	
ctg cag ccc agc tcc agg gag agc aac att agg atc tac agc gag agc				1099
Leu Gln Pro Ser Ser Arg Glu Ser Asn Ile Arg Ile Tyr Ser Glu Ser				
196	201	206	211	
gcc ccc tcc tgg ctg agc aaa gat gac atc cga aga atg cga ctc ttg				1147
Ala Pro Ser Trp Leu Ser Lys Asp Asp Ile Arg Arg Met Arg Leu Leu				
212	217	222	227	
gcg gac agc gca gtg gca ggg ctc cgg cct gtg tcc tct agg agc gga				1195
Ala Asp Ser Ala Val Ala Gly Leu Arg Pro Val Ser Ser Arg Ser Gly				
228	233	238	243	
gcc cgt ttg ctg gtg ctg gag ggg ggc gca cct ggc gct gtg ctc cgc				1243
Ala Arg Leu Leu Val Leu Glu Gly Gly Ala Pro Gly Ala Val Leu Arg				
244	249	254	259	

tgt ggc cct agc ccc tgt ggg ctt ctc aag cag ccc ttg gac atg agt	1291
Cys Gly Pro Ser Pro Cys Gly Leu Leu Lys Gln Pro Leu Asp Met Ser	
260 265 270 275	
gag gtg ttt gcc ttc cac cta gac agg atc ctg ggg ctc aac agg acc	1339
Glu Val Phe Ala Phe His Leu Asp Arg Ile Leu Gly Leu Asn Arg Thr	
276 281 286 291	
ctg ccg tct gtg agc agg aaa gca gag ttc atc caa gat ggc cgc cca	1387
Leu Pro Ser Val Ser Arg Lys Ala Glu Phe Ile Gln Asp Gly Arg Pro	
292 297 302 307	
tgc ccc atc att ctt tgg gat gca tct tta tct tca gca agt aat gac	1435
Cys Pro Ile Ile Leu Trp Asp Ala Ser Leu Ser Ser Ala Ser Asn Asp	
308 313 318 323	
acc cat tct tct gtt aag ctc acc tgg gga act tat cag cag ttg ctg	1483
Thr His Ser Ser Val Lys Leu Thr Trp Gly Thr Tyr Gln Gln Leu Leu	
324 329 334 339	
aaa cag aaa tgc tgg cag aat ggc cga gta ccc aag cct gaa tca ggt	1531
Lys Gln Lys Cys Trp Gln Asn Gly Arg Val Pro Lys Pro Glu Ser Gly	
340 345 350 355	
tgt act gaa ata cat cat cat gag tgg tcc aag atg gca ctc ttt gat	1579
Cys Thr Glu Ile His His His Glu Trp Ser Lys Met Ala Leu Phe Asp	
356 361 366 371	
ttt ttg tta cag att tat aat cgc tta gat aca aat tgc tgt gga ttc	1627
Phe Leu Leu Gln Ile Tyr Asn Arg Leu Asp Thr Asn Cys Cys Gly Phe	
372 377 382 387	
aga cct cgc aag gaa gat gcc tgt gta cag aat gga ttg agg cca aaa	1675
Arg Pro Arg Lys Glu Asp Ala Cys Val Gln Asn Gly Leu Arg Pro Lys	
388 393 398 403	
tgt gat gac caa ggt tct gcg gct cta gca cac att atc cag cga aag	1723
Cys Asp Asp Gln Gly Ser Ala Ala Leu Ala His Ile Ile Gln Arg Lys	
404 409 414 419	
cat gac cca agg cat ttg gtt ttt ata gac aac aag ggt ttc ttt gac	1771
His Asp Pro Arg His Leu Val Phe Ile Asp Asn Lys Gly Phe Phe Asp	
420 425 430 435	
agg agt gaa gat aac tta aac ttc aaa ttg tta gaa ggc atc aaa gag	1819
Arg Ser Glu Asp Asn Leu Asn Phe Lys Leu Leu Glu Gly Ile Lys Glu	
436 441 446 451	
ttt oca gct tct gca gtt tct gtt ttg aag agc cag cac tta cgg cag	1867
Phe Pro Ala Ser Ala Val Ser Val Leu Lys Ser Gln His Leu Arg Gln	
452 457 462 467	
aaa ctt ctt cag tct ctg ttt ctt gat aaa gtg tat tgg gaa agt caa	1915
Lys Leu Leu Gln Ser Leu Phe Leu Asp Lys Val Tyr Trp Glu Ser Gln	
468 473 478 483	

gga ggt aga caa gga att gaa aag ctt atc gat gta ata gaa cac aga 1963  
 Gly Gly Arg Gln Gly Ile Glu Lys Leu Ile Asp Val Ile Glu His Arg  
 484 489 494 499

gcc aaa att ctt atc acc tat atc aat gca cac ggg gtc aaa gta tta 2011  
 Ala Lys Ile Leu Ile Thr Tyr Ile Asn Ala His Gly Val Lys Val Leu  
 500 505 510 515

cct atg aat gaa tga caaaagaatc ttctggctag ggtgtagat atatttatgc 2066  
 Pro Met Asn Glu \*  
 516

atTTTTggtt ttgtTTTTaa atcaagcaca tcaacctcaa gccggttag caatgaggca 2126

gtgtagatga atacgtaaaa taaatgactt taaccaagta gctataatgg gacttagcac 2186

tgtatgcata cttaaaaagg ttttgaaaaa caaactactt gagaaatatt tgtttatatt 2246

tttctctaac atcatgctat gtgtcagtct gaacatctga caacagaaat ttcagttatt 2306

attctagcta agttttgaaa acatttgtca tgctgtttaa tagaaaactg caaaccagag 2366

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gctaccccca cggtggact ggtttgtgca caccagatg ggccagctgg cccaagacgg 180

ggtccccgag tggttccatg gtgcaatctc aagagaggat gctgagaact tgctggagtc 240

acagccactg ggatcctttc tcatcagggt cagtcacagc catgtgggct acacactctc 300

ctacaagtaa ggctgggccc gggatccagg gcaggggcag gtgggctctt gggtttctt 360

ggagggggca aggggtgctt catgtcatag cttctcagaa agcagcagta actgaggctg 420

tggatctgag aacgggagct gctagccaag caatgagtga agcttttgtc cgtagtggca 480

tgttttatct gaggccagcc tttgtactcc tgtgttataa atgggggaaa ctgaggcaca 540

gcgaggtag taacctgctg ggtgttgcac ggccagttag tgaagaagcc tgcattggaa 600

cctggggtag tctggctgta gcagtgacgc tgccggccca agggctgggg acttggggca	660
ggg atg agg ggg agt agg atg tcc cag ccc ccg cag tgt ctc cgc aga	708
Met Arg Gly Ser Arg Met Ser Gln Pro Pro Gln Cys Leu Arg Arg	
1 5 10	
gcc caa agc agc tgc tgc cat ttc atg gtg aag ctc ttg gat gat ggg	756
Ala Gln Ser Ser Cys Cys His Phe Met Val Lys Leu Leu Asp Asp Gly	
16 21 26 31	
act ttc atg atc ccc ggg gag aag gtg gcc cac acc tcg ctg gac gcc	804
Thr Phe Met Ile Pro Gly Glu Lys Val Ala His Thr Ser Leu Asp Ala	
32 37 42 47	
ctg gtc acc ttc cac cag cag aag cca att gag ccg cgc agg gag ctg	852
Leu Val Thr Phe His Gln Gln Lys Pro Ile Glu Pro Arg Arg Glu Leu	
48 53 58 63	
ctg aca cag ccc tgc agg cag aag gat ccc gca aac gtg gat tac gag	900
Leu Thr Gln Pro Cys Arg Gln Lys Asp Pro Ala Asn Val Asp Tyr Glu	
64 69 74 79	
gat ctc ttc ctc tac tcc aac gca gtg gcc gag gaa gct gcc tgc ccg	948
Asp Leu Phe Leu Tyr Ser Asn Ala Val Ala Glu Glu Ala Ala Cys Pro	
80 85 90 95	
gtg tct gcc cct gag gag gcc tcc cca aag cca gtc ctg tgt cac caa	996
Val Ser Ala Pro Glu Glu Ala Ser Pro Lys Pro Val Leu Cys His Gln	
96 101 106 111	
tca aag gaa agg aag ccg tca gca gag atg aac aga ata acc acc aag	1044
Ser Lys Glu Arg Lys Pro Ser Ala Glu Met Asn Arg Ile Thr Thr Lys	
112 117 122 127	
gaa gcc act tcc tcc tgc ccc cca aaa tcc cct ctt gga gag acc cgc	1092
Glu Ala Thr Ser Ser Cys Pro Pro Lys Ser Pro Leu Gly Glu Thr Arg	
128 133 138 143	
cag aaa ctc tgg agg agc ctc aaa atg ctc ccc gag aga ggc cag agg	1140
Gln Lys Leu Trp Arg Ser Leu Lys Met Leu Pro Glu Arg Gly Gln Arg	
144 149 154 159	
gtc cgg cag cag cta aaa agc cac ctc gcc act gtg aac ttg tcg tca	1188
Val Arg Gln Gln Leu Lys Ser His Leu Ala Thr Val Asn Leu Ser Ser	
160 165 170 175	
ctc ttg gat gtc cgg aga tcc acg gtg atc tca ggc cct ggg acc gga	1236
Leu Leu Asp Val Arg Arg Ser Thr Val Ile Ser Gly Pro Gly Thr Gly	
176 181 186 191	
aaa ggc agc caa gat cac tca ggg gat ccc acc tcg ggg gac aga ggc	1284
Lys Gly Ser Gln Asp His Ser Gly Asp Pro Thr Ser Gly Asp Arg Gly	
192 197 202 207	
tac acg gat ccc tgt gtg gcc aca tct ctc aaa agc ccc tca cag ccc	1332
Tyr Thr Asp Pro Cys Val Ala Thr Ser Leu Lys Ser Pro Ser Gln Pro	
208 213 218 223	

cag gca cca aaa gac aga aag gtc ccc acc agg aag gcc gag agg tcg	1380
Gln Ala Pro Lys Asp Arg Lys Val Pro Thr Arg Lys Ala Glu Arg Ser	
224 229 234 239	
gtc agc tgc att gag gtg acc cca ggg gac agg agt tgg cac caa atg	1428
Val Ser Cys Ile Glu Val Thr Pro Gly Asp Arg Ser Trp His Gln Met	
240 245 250 255	
gta gtg aga gcc cta tcc tcc cag gag tcc aag cca gag cac cag ggc	1476
Val Val Arg Ala Leu Ser Ser Gln Glu Ser Lys Pro Glu His Gln Gly	
256 261 266 271	
ttg gca gag cct gag aac gac cag ctc ccg gag gag tac caa caa ccg	1524
Leu Ala Glu Pro Glu Asn Asp Gln Leu Pro Glu Glu Tyr Gln Gln Pro	
272 277 282 287	
cca ccc ttt gcc cct ggg tac tgc tag agaac aggtccaccc tggctctggg	1576
Pro Pro Phe Ala Pro Gly Tyr Cys *	
288 293	
actcgctgcc aggggctgcc acactcctga atgccttaac atttcttcca tggccccaca	1636
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gcagagcagc atctgctgaa gagacagaaa ccagccccag aggtgtcaca ggaaggcacc	180
agcaaggaca ttggtctttg atttgattca gcagtcctgt caagtataaa tgtg atg	237
	Met
	1
gct gtg ctg cct ggc cct ctg cag ctg ctg gga gtg ctg ctt acc att	285
Ala Val Leu Pro Gly Pro Leu Gln Leu Leu Gly Val Leu Leu Thr Ile	
2 7 12 17	
tcc ctg agt tcc atc agg ctc att cag gct ggt gcc tac tat ggg atc	333
Ser Leu Ser Ser Ile Arg Leu Ile Gln Ala Gly Ala Tyr Tyr Gly Ile	
18 23 28 33	



aag ccg ctg cca cct caa att cct cct cag atg cca cca caa att cca	381
Lys Pro Leu Pro Pro Gln Ile Pro Pro Gln Met Pro Pro Gln Ile Pro	
34 39 44 49	
caa tac cag ccc ctg ggt cag caa gta cct cac atg cct ttg gcc aaa	429
Gln Tyr Gln Pro Leu Gly Gln Gln Val Pro His Met Pro Leu Ala Lys	
50 55 60 65	
gat ggc ctc gcc atg ggc aag gag atg ccc cac ttg cag tat ggc aaa	477
Asp Gly Leu Ala Met Gly Lys Glu Met Pro His Leu Gln Tyr Gly Lys	
66 71 76 81	
gag tat cca cac cta ccc caa tat atg aag gaa att caa ccg gcg cca	525
Glu Tyr Pro His Leu Pro Gln Tyr Met Lys Glu Ile Gln Pro Ala Pro	
82 87 92 97	
aga atg ggc aag gaa gcc gtt ccc aag aaa ggc aaa gaa ata cca tta	573
Arg Met Gly Lys Glu Ala Val Pro Lys Lys Gly Lys Glu Ile Pro Leu	
98 103 108 113	
gcc agt tta cga ggg gaa caa ggt ccc cgt gga gag cct ggc cca aga	621
Ala Ser Leu Arg Gly Glu Gln Gly Pro Arg Gly Glu Pro Gly Pro Arg	
114 119 124 129	
gga cca cct ggg ccc cct ggt tta cca ggt cat ggg ata cct gga att	669
Gly Pro Pro Gly Pro Pro Gly Leu Pro Gly His Gly Ile Pro Gly Ile	
130 135 140 145	
aaa gga aaa cca ggg cca cag gga tat cca gga gtt gga aag cca ggt	717
Lys Gly Lys Pro Gly Pro Gln Gly Tyr Pro Gly Val Gly Lys Pro Gly	
146 151 156 161	
atg cct gga atg cca ggg aag cca gga gcc atg ggc atg cct ggg gca	765
Met Pro Gly Met Pro Gly Lys Pro Gly Ala Met Gly Met Pro Gly Ala	
162 167 172 177	
aaa gga gaa att gga cag aaa ggg gaa att ggg cct atg ggg atc cca	813
Lys Gly Glu Ile Gly Gln Lys Gly Glu Ile Gly Pro Met Gly Ile Pro	
178 183 188 193	
gga cca caa gga cct cca ggg cct cat gga ctt cct ggc att ggg aag	861
Gly Pro Gln Gly Pro Pro Gly Pro His Gly Leu Pro Gly Ile Gly Lys	
194 199 204 209	
cca ggt ggg cca ggg tta cca ggg caa cca gga cca aag ggt gat cga	909
Pro Gly Gly Pro Gly Leu Pro Gly Gln Pro Gly Pro Lys Gly Asp Arg	
210 215 220 225	
gga ccc aaa gga cta cca gga cct caa ggc ctt cgg ggt cct aaa gga	957
Gly Pro Lys Gly Leu Pro Gly Pro Gln Gly Leu Arg Gly Pro Lys Gly	
226 231 236 241	
gac aag ggc ttc ggg atg cca ggt ggc cca ggt gta aag ggg cct cca	1005
Asp Lys Gly Phe Gly Met Pro Gly Ala Pro Gly Val Lys Gly Pro Pro	
242 247 252 257	

ggg atg cac ggc cct ccc ggc cct gtt gga ctg cca gga gtg ggc aaa Gly Met His Gly Pro Pro Gly Pro Val Gly Leu Pro Gly Val Gly Lys 258 263 268 273	1053
cca gga gtg aca ggc ttc cct ggg ccc cag ggc ccc ctg gga aag cca Pro Gly Val Thr Gly Phe Pro Gly Pro Gln Gly Pro Leu Gly Lys Pro 274 279 284 289	1101
ggg gct cca gga gaa cct ggg cca caa ggc cct att ggg gta ccg ggg Gly Ala Pro Gly Glu Pro Gly Pro Gln Gly Pro Ile Gly Val Pro Gly 290 295 300 305	1149
gtt caa gga cct cct ggg ata ccc gga att gga aag cca ggc cag gat Val Gln Gly Pro Pro Gly Ile Pro Gly Ile Gly Lys Pro Gly Gln Asp 306 311 316 321	1197
ggg atc cca ggc cag cca gga ttt cca ggt ggc aaa ggg gag caa gga Gly Ile Pro Gly Gln Pro Gly Phe Pro Gly Gly Lys Gly Glu Gln Gly 322 327 332 337	1245
ctg cca ggg cta cca gga ccc cca ggc ctt cca ggg att ggg aaa cca Leu Pro Gly Leu Pro Gly Pro Pro Gly Leu Pro Gly Ile Gly Lys Pro 338 343 348 353	1293
ggc ttc cca gga ccc aaa ggt gac cgg ggc atg gga ggt gtt cct ggg Gly Phe Pro Gly Pro Lys Gly Asp Arg Gly Met Gly Gly Val Pro Gly 354 359 364 369	1341
gct ctt gga cca aga ggg gag aaa gga cca ata ggt gcc cca gga ata Ala Leu Gly Pro Arg Gly Glu Lys Gly Pro Ile Gly Ala Pro Gly Ile 370 375 380 385	1389
ggg ggt cct cca gga gag cca ggc ctg cct gga atc cca ggt cct atg Gly Gly Pro Pro Gly Glu Pro Gly Leu Pro Gly Ile Pro Gly Pro Met 386 391 396 401	1437
ggc cct cca ggt gct att ggt ttt cct gga ccc aaa gga gaa ggt ggg Gly Pro Pro Gly Ala Ile Gly Phe Pro Gly Pro Lys Gly Glu Gly Gly 402 407 412 417	1485
att gta ggg cca cag ggg cca cca ggt ccc aag ggt gag cca ggg ctt Ile Val Gly Pro Gln Gly Pro Pro Gly Pro Lys Gly Glu Pro Gly Leu 418 423 428 433	1533
caa ggc ttc cca gga aag cca ggt ttc ctt ggt gaa gta ggg cct cct Gln Gly Phe Pro Gly Lys Pro Gly Phe Leu Gly Glu Val Gly Pro Pro 434 439 444 449	1581
ggc atg agg ggt ttc cca ggt ccc ata ggc ccc aag ggg gaa cat ggg Gly Met Arg Gly Phe Pro Gly Pro Ile Gly Pro Lys Gly Glu His Gly 450 455 460 465	1629
caa aaa ggt gta cca gga ctc cct ggt gtt cca ggg ctt ctc gga cct Gln Lys Gly Val Pro Gly Leu Pro Gly Val Pro Gly Leu Leu Gly Pro 466 471 476 481	1677
aag gga gaa cca gga atc cca ggg gat cag ggt tta cag ggc ccc cca	1725

Lys Gly Glu Pro Gly Ile Pro Gly Asp Gln Gly Leu Gln Gly Pro Pro	
482 487 492 497	
ggt atc cca ggg att ggg ggc cct agt ggc ccc att gga cca cct ggg	1773
Gly Ile Pro Gly Ile Gly Gly Pro Ser Gly Pro Ile Gly Pro Pro Gly	
498 503 508 513	
att cca ggc ccc aaa ggg gag cct ggc ctc cca ggg ccc cct ggg ttc	1821
Ile Pro Gly Pro Lys Gly Glu Pro Gly Leu Pro Gly Pro Pro Gly Phe	
514 519 524 529	
cct ggt ata ggg aaa ccc gga gtg gca gga ctt cat ggc ccc cca ggg	1869
Pro Gly Ile Gly Lys Pro Gly Val Ala Gly Leu His Gly Pro Pro Gly	
530 535 540 545	
aag cct ggt gcc ctt ggt cct caa ggc cag cct ggc ctt cca gga ccc	1917
Lys Pro Gly Ala Leu Gly Pro Gln Gly Gln Pro Gly Leu Pro Gly Pro	
546 551 556 561	
cca ggc cct cca gga cct cca gga ccc cca gct gtg atg ccc cct aca	1965
Pro Gly Pro Pro Gly Pro Pro Gly Pro Pro Ala Val Met Pro Pro Thr	
562 567 572 577	
cca cca ccc cag gga gag tat ctg cca gat atg ggg ctg gga att gat	2013
Pro Pro Pro Gln Gly Glu Tyr Leu Pro Asp Met Gly Leu Gly Ile Asp	
578 583 588 593	
ggc gtg aaa ccc ccc cat gcc tac ggg gct aag aaa ggc aag aat gga	2061
Gly Val Lys Pro Pro His Ala Tyr Gly Ala Lys Lys Gly Lys Asn Gly	
594 599 604 609	
ggg cca gcc tat gag atg cct gca ttt acc gcc gag cta acc gca cct	2109
Gly Pro Ala Tyr Glu Met Pro Ala Phe Thr Ala Glu Leu Thr Ala Pro	
610 615 620 625	
ttc cca ccg gtg ggg gcc cca gtg aag ttt aac aaa ctg ctg tat aac	2157
Phe Pro Pro Val Gly Ala Pro Val Lys Phe Asn Lys Leu Leu Tyr Asn	
626 631 636 641	
ggc aga cag aac tac aac ccg cag aca ggc atc ttc acc tgt gag gtc	2205
Gly Arg Gln Asn Tyr Asn Pro Gln Thr Gly Ile Phe Thr Cys Glu Val	
642 647 652 657	
cct ggt gtc tac tac ttt gca tac cac gtt cac tgc aag ggg ggc aac	2253
Pro Gly Val Tyr Tyr Phe Ala Tyr His Val His Cys Lys Gly Gly Asn	
658 663 668 673	
gtg tgg gtt gct cta ttc aag aac aac gag ccc gtg atg tac acg tac	2301
Val Trp Val Ala Leu Phe Lys Asn Asn Glu Pro Val Met Tyr Thr Tyr	
674 679 684 689	
gac gag tac aaa aag ggc ttc ctg gac cag gca tct ggg agt gca gtg	2349
Asp Glu Tyr Lys Lys Gly Phe Leu Asp Gln Ala Ser Gly Ser Ala Val	
690 695 700 705	
ctg ctg ctc agg ccc gga gac cgg gtg ttc ctc cag atg ccc tca gaa	2397
Leu Leu Leu Arg Pro Gly Asp Arg Val Phe Leu Gln Met Pro Ser Glu	

706	711	716	721	
cag gct gca gga ctg tat gcc ggg cag tat gtc cac tcc tcc ttt tca				2445
Gln Ala Ala Gly Leu Tyr Ala Gly Gln Tyr Val His Ser Ser Phe Ser				
722	727	732	737	
gga tat tta ttg tat ccc atg taa aaacaaaaaa aaaaaaaa				2487
Gly Tyr Leu Leu Tyr Pro Met *				
738	743			

<210> 161  
 <211> 1718  
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 <213> Homo sapiens

<220>  
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tggtggagcc gtctgcaaag tgtccccggc aagaagaggc tgcctaccac aaggacttta	120
gcttactttt taaagattga agaaaaaaaa gaagacagaa aaagaagaac tcaaagatac	180
acaaagtaat ttgaaccaag gctcagaagt ttttggagcc gtgagggata cagcagtttg	240
gtcaatattg tcttaac     atg ctt caa ata aat cag atg ttc tca gtg cag	290
Met Leu Gln Ile Asn Gln Met Phe Ser Val Gln	
1                               5	
ctg agt ctt ggt gag cag aca tgg gaa tcc gaa ggc agc agt ata aag	338
Leu Ser Leu Gly Glu Gln Thr Trp Glu Ser Glu Gly Ser Ser Ile Lys	
12                               17                               22                               27	
aag gct cag cag gct gtt gcc aat aaa gct ttg act gaa tct acg ctt	386
Lys Ala Gln Gln Ala Val Ala Asn Lys Ala Leu Thr Glu Ser Thr Leu	
28                               33                               38                               43	
ccc aaa cca gtt cag aag cca ccc aaa agt aat gtt aac aat aac cca	434
Pro Lys Pro Val Gln Lys Pro Pro Lys Ser Asn Val Asn Asn Asn Pro	
44                               49                               54                               59	
ggc agt ata act cca act gtg gaa ctg aat ggg ctt gct atg aaa agg	482
Gly Ser Ile Thr Pro Thr Val Glu Leu Asn Gly Leu Ala Met Lys Arg	
60                               65                               70                               75	
gga gag cct gcc atc tac agg cca tta gat cca aag cca ttc cca aat	530
Gly Glu Pro Ala Ile Tyr Arg Pro Leu Asp Pro Lys Pro Phe Pro Asn	
76                               81                               86                               91	
tat aga gct aat tac aac ttt cgg ggc atg tac aat cag agg tat cat	578

Tyr	Arg	Ala	Asn	Tyr	Asn	Phe	Arg	Gly	Met	Tyr	Asn	Gln	Arg	Tyr	His	
92					97					102					107	
tgc	cca	gtg	cct	aag	atc	ttt	tat	gtt	cag	ctc	act	gta	gga	aat	aat	626
Cys	Pro	Val	Pro	Lys	Ile	Phe	Tyr	Val	Gln	Leu	Thr	Val	Gly	Asn	Asn	
108					113					118					123	
gaa	ttt	ttt	ggg	gaa	gga	aag	act	cga	caa	gct	gct	aga	cac	aat	gct	674
Glu	Phe	Phe	Gly	Glu	Gly	Lys	Thr	Arg	Gln	Ala	Ala	Arg	His	Asn	Ala	
124					129					134					139	
gca	atg	aaa	gcc	ctc	caa	gca	ctg	cag	aat	gaa	cct	att	cca	gaa	aga	722
Ala	Met	Lys	Ala	Leu	Gln	Ala	Leu	Gln	Asn	Glu	Pro	Ile	Pro	Glu	Arg	
140					145					150					155	
tct	cct	cag	aat	ggg	gaa	tca	gga	aag	gat	atg	gat	gat	gac	aaa	gat	770
Ser	Pro	Gln	Asn	Gly	Glu	Ser	Gly	Lys	Asp	Met	Asp	Asp	Asp	Lys	Asp	
156					161					166					171	
gca	aat	aag	tct	gag	atc	agc	tta	gtg	ttt	gaa	att	gct	ctg	aag	cga	818
Ala	Asn	Lys	Ser	Glu	Ile	Ser	Leu	Val	Phe	Glu	Ile	Ala	Leu	Lys	Arg	
172					177					182					187	
aat	atg	cct	gtc	agt	ttt	gag	gtt	att	aaa	gaa	agt	gga	cca	cca	cat	866
Asn	Met	Pro	Val	Ser	Phe	Glu	Val	Ile	Lys	Glu	Ser	Gly	Pro	Pro	His	
188					193					198					203	
atg	aaa	agc	ttt	gtt	act	cga	gtg	tca	gta	gga	gag	ttc	tct	gca	gaa	914
Met	Lys	Ser	Phe	Val	Thr	Arg	Val	Ser	Val	Gly	Glu	Phe	Ser	Ala	Glu	
204					209					214					219	
gga	gaa	gga	aat	agc	aaa	aaa	ctc	tcc	aag	aag	cgc	gct	gcg	acc	acc	962
Gly	Glu	Gly	Asn	Ser	Lys	Lys	Leu	Ser	Lys	Lys	Arg	Ala	Ala	Thr	Thr	
220					225					230					235	
gtc	tta	cag	gag	ctt	aaa	aaa	ctt	cca	cct	ctt	cct	gtg	gtg	gaa	aag	1010
Val	Leu	Gln	Glu	Leu	Lys	Lys	Leu	Pro	Pro	Leu	Pro	Val	Val	Glu	Lys	
236					241					246					251	
cca	aaa	cta	ttt	ttt	aaa	aaa	cgc	cct	aaa	aca	ata	gta	aag	gcc	gga	1058
Pro	Lys	Leu	Phe	Phe	Lys	Lys	Arg	Pro	Lys	Thr	Ile	Val	Lys	Ala	Gly	
252					257					262					267	
cca	gaa	tat	ggc	caa	ggg	atg	aac	cct	att	agc	cgc	ctg	gcg	caa	att	1106
Pro	Glu	Tyr	Gly	Gln	Gly	Met	Asn	Pro	Ile	Ser	Arg	Leu	Ala	Gln	Ile	
268					273					278					283	
caa	cag	gcc	aaa	aag	gaa	aag	gag	ccg	gat	tat	gtt	ttg	ctt	tca	gaa	1154
Gln	Gln	Ala	Lys	Lys	Glu	Lys	Glu	Pro	Asp	Tyr	Val	Leu	Leu	Ser	Glu	
284					289					294					299	
aga	gga	atg	cct	cga	cgt	cga	gaa	ttt	gtg	atg	cag	gtg	aag	gta	ggc	1202
Arg	Gly	Met	Pro	Arg	Arg	Arg	Glu	Phe	Val	Met	Gln	Val	Lys	Val	Gly	
300					305					310					315	
aat	gaa	gtt	gct	aca	gga	aca	gga	cct	aat	aaa	aag	ata	gcc	aaa	aaa	1250
Asn	Glu	Val	Ala	Thr	Gly	Thr	Gly	Pro	Asn	Lys	Lys	Ile	Ala	Lys	Lys	

316	321	326	331	
aat gct gca gaa gca atg ctg tta caa ctt ggt tat aaa gca tcc act				1298
Asn Ala Ala Glu Ala Met Leu Leu Gln Leu Gly Tyr Lys Ala Ser Thr				
332	337	342	347	
aat ctt cag gat caa ctt gag aag aca ggg gaa aac aaa gga tgg agt				1346
Asn Leu Gln Asp Gln Leu Glu Lys Thr Gly Glu Asn Lys Gly Trp Ser				
348	353	358	363	
ggg cca aag cct ggg ttt cct gaa cca aca aat aat act cca aaa gga				1394
Gly Pro Lys Pro Gly Phe Pro Glu Pro Thr Asn Asn Thr Pro Lys Gly				
364	369	374	379	
att ctt cat ttg tct cct gat gtt tat caa gag atg gaa gcc agc cgc				1442
Ile Leu His Leu Ser Pro Asp Val Tyr Gln Glu Met Glu Ala Ser Arg				
380	385	390	395	
cac aaa gta atc tct ggc act act cta ggc tat ttg tca ccc aaa gat				1490
His Lys Val Ile Ser Gly Thr Thr Leu Gly Tyr Leu Ser Pro Lys Asp				
396	401	406	411	
atg aac caa cct tca agc tct ttc ttc agt ata tct ccc aca tcg aat				1538
Met Asn Gln Pro Ser Ser Ser Phe Phe Ser Ile Ser Pro Thr Ser Asn				
412	417	422	427	
agt tca gct aca att gcc agg gaa ctc ctt atg aat gga aca tct tct				1586
Ser Ser Ala Thr Ile Ala Arg Glu Leu Leu Met Asn Gly Thr Ser Ser				
428	433	438	443	
aca gct gaa gcc ata ggt tta aaa gga agt tct cct act ccc cct tgt				1634
Thr Ala Glu Ala Ile Gly Leu Lys Gly Ser Ser Pro Thr Pro Pro Cys				
444	449	454	459	
tct cca gta caa cct tca aaa caa ctg gaa tat tta gca agg att caa				1682
Ser Pro Val Gln Pro Ser Lys Gln Leu Glu Tyr Leu Ala Arg Ile Gln				
460	465	470	475	
ggc ttt cag gta tga attaaaagca aaaaaaaaaa a				1718
Gly Phe Gln Val *				
476				

<210> 162  
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 <212> DNA  
 <213> Homo sapiens

<220>  
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 <222> (263)..(862)

<400> 162

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ctctggtgac cgcccctacc tggcatccct ctaaccagg aggagcgtgg ggaaaggggc	120
tgtgggcctc tcggggagcg agctgcggt agcggcgcac tgggtacagg cgcgcgcttg	180
gctgtgcct ctgccgtgt gtttgggagg actcgaactg gcgccaggaa atattaggaa	240
gctgtgattt tcaaagctaa tt atg aaa aca ttt atc att gga atc agt ggt	292
Met Lys Thr Phe Ile Ile Gly Ile Ser Gly	
1 5	
gtg aca aac agt ggc aaa aca aca ctg gct aag aat ttg cag aaa cac	340
Val Thr Asn Ser Gly Lys Thr Thr Leu Ala Lys Asn Leu Gln Lys His	
11 16 21 26	
ctc cca aat tgc agt gtc ata tct cag gat gat ttc ttc aag cca gag	388
Leu Pro Asn Cys Ser Val Ile Ser Gln Asp Asp Phe Phe Lys Pro Glu	
27 32 37 42	
tct gag ata gag aca gat aaa aat gga ttt ttg cag tac gat gtg ctt	436
Ser Glu Ile Glu Thr Asp Lys Asn Gly Phe Leu Gln Tyr Asp Val Leu	
43 48 53 58	
gaa gca ctt aac atg gaa aaa atg atg tca gcc att tcc tgc tgg atg	484
Glu Ala Leu Asn Met Glu Lys Met Met Ser Ala Ile Ser Cys Trp Met	
59 64 69 74	
gaa agc gca aga cac tct gtg gta tca aca gac cag gaa agt gct gag	532
Glu Ser Ala Arg His Ser Val Val Ser Thr Asp Gln Glu Ser Ala Glu	
75 80 85 90	
gaa att ccc att tta atc atc gaa ggt ttt ctt ctt ttt aat tat aag	580
Glu Ile Pro Ile Leu Ile Ile Glu Gly Phe Leu Leu Phe Asn Tyr Lys	
91 96 101 106	
ccc ctt gac act ata tgg aat aga agc tat ttc ctg act att cca tat	628
Pro Leu Asp Thr Ile Trp Asn Arg Ser Tyr Phe Leu Thr Ile Pro Tyr	
107 112 117 122	
gaa gaa tgt aaa agg agg agg agt aca agg gtc tat cag cct cca gac	676
Glu Glu Cys Lys Arg Arg Arg Ser Thr Arg Val Tyr Gln Pro Pro Asp	
123 128 133 138	
tct ccg gga tac ttt gat ggc cat gtg tgg ccc atg tat cta aag tac	724
Ser Pro Gly Tyr Phe Asp Gly His Val Trp Pro Met Tyr Leu Lys Tyr	
139 144 149 154	
aga caa gaa atg cag gac atc aca tgg gaa gtt gtg tac ctg gat gga	772
Arg Gln Glu Met Gln Asp Ile Thr Trp Glu Val Val Tyr Leu Asp Gly	
155 160 165 170	
aca aaa tct gaa gag gac ctc ttt ttg caa gta tat gaa gat cta ata	820
Thr Lys Ser Glu Glu Asp Leu Phe Leu Gln Val Tyr Glu Asp Leu Ile	
171 176 181 186	
caa gaa cta gca aag caa aag tgt ttg caa gtg aca gca taa agacgga	869
Gln Glu Leu Ala Lys Gln Lys Cys Leu Gln Val Thr Ala *	

187

192

197

acacaacaaa tccttcctga agtgaattag gaaactccaa ggagtaattt aagaaccttc 929  
 accaagatac aatgtatact gtggtacaat gacagccatt gtttcatatg tttgattttt 989  
 attgcacatg gttttcccaa catgtggaac aataaatatc catgccaatg gacaggactg 1049  
 taccttagca agttgctccc tctccaggga gcgcatagat acagcagagc tcacagttag 1109  
 tcagaaagtc tccactttct gaacatagct ctataacaat gattgtcaaa cttttctaac 1169  
 tggagctcag agtaagaaat aaagattaca tcacaatcca aaaaaaaaaa aa 1221

&lt;210&gt; 163

&lt;211&gt; 2925

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (178) .. (2433)

&lt;400&gt; 163

ttgcttgtcc accttccagc ttttaacgctc tgcaacaggg tagacaacct cagcgtgttg 60

cagattccct gcaaggggag ttagacatct gagtcctaga ccgagatacc agctgaagga 120

acgctgcttg gcgaaccttg gtgttcaagt tccagaggaa cgggatgagc tcctgag 177

atg gaa gat ctg tcc tct cca gac tcc acc ctt ctc caa ggg gga cat 225

Met Glu Asp Leu Ser Ser Pro Asp Ser Thr Leu Leu Gln Gly Gly His

1

5

10

15

aat cta ctc tca tca gcc agt ttt cag gaa gcg gtg act ttc aag gat 273

Asn Leu Leu Ser Ser Ala Ser Phe Gln Glu Ala Val Thr Phe Lys Asp

17

22

27

32

gtg ata gtg gac ttt acc cag gaa gaa tgg aaa cag ctg gac oct ggc 321

Val Ile Val Asp Phe Thr Gln Glu Glu Trp Lys Gln Leu Asp Pro Gly

33

38

43

48

cag aga gat ttg ttc agg gat gtg aca ttg gaa aat tat aca cac ctg 369

Gln Arg Asp Leu Phe Arg Asp Val Thr Leu Glu Asn Tyr Thr His Leu

49

54

59

64

gtc tct ata gga ctc caa gtt tct aaa cct gat gtg att tcc cag tta 417

Val Ser Ile Gly Leu Gln Val Ser Lys Pro Asp Val Ile Ser Gln Leu

65

70

75

80

gag caa ggg aca gag cca tgg atc atg gag cca agc att cca gta ggt 465

Glu Gln Gly Thr Glu Pro Trp Ile Met Glu Pro Ser Ile Pro Val Gly

81

86

91

96

acc tgt gca gac tgg gag aca aga ctt gaa aat agt gtg tca gcc cca 513



Thr Cys Ala Asp Trp Glu Thr Arg Leu Glu Asn Ser Val Ser Ala Pro	
97 102 107 112	
gag cct gac att tct gaa gaa gag cta tct cca gag gta ata gtg gaa	561
Glu Pro Asp Ile Ser Glu Glu Glu Leu Ser Pro Glu Val Ile Val Glu	
113 118 123 128	
aaa cac aaa aga gat gat tct tgg agt tcc aac ttg cta gaa agt tgg	609
Lys His Lys Arg Asp Asp Ser Trp Ser Ser Asn Leu Leu Glu Ser Trp	
129 134 139 144	
gaa tat gaa ggc agt tta gag aga cag cag gca aac caa cag aca ctg	657
Glu Tyr Glu Gly Ser Leu Glu Arg Gln Gln Ala Asn Gln Gln Thr Leu	
145 150 155 160	
cca aag gaa ata aag gta acc gaa aag aca ata ccc agt tgg gaa aaa	705
Pro Lys Glu Ile Lys Val Thr Glu Lys Thr Ile Pro Ser Trp Glu Lys	
161 166 171 176	
ggc cct gta aat aat gaa ttt ggg aaa agt gtc aat gtg agt tca aac	753
Gly Pro Val Asn Asn Glu Phe Gly Lys Ser Val Asn Val Ser Ser Asn	
177 182 187 192	
ctt gta aca caa gaa cca tct cca gaa gag acc tct act aaa aga agc	801
Leu Val Thr Gln Glu Pro Ser Pro Glu Glu Thr Ser Thr Lys Arg Ser	
193 198 203 208	
atc aaa cag aat tca aac cca gtt aaa aaa gag aaa tct tgt aag tgc	849
Ile Lys Gln Asn Ser Asn Pro Val Lys Lys Glu Lys Ser Cys Lys Cys	
209 214 219 224	
aat gaa tgt ggg aaa gcc ttt agt tat tgt tca gct ctt att cgc cat	897
Asn Glu Cys Gly Lys Ala Phe Ser Tyr Cys Ser Ala Leu Ile Arg His	
225 230 235 240	
cag aga aca cat act gga gaa aaa ccc tac aaa tgt aat gaa tgt gaa	945
Gln Arg Thr His Thr Gly Glu Lys Pro Tyr Lys Cys Asn Glu Cys Glu	
241 246 251 256	
aaa gcc ttc agc cgg agt gaa aac ctt ata aac cat caa aga att cat	993
Lys Ala Phe Ser Arg Ser Glu Asn Leu Ile Asn His Gln Arg Ile His	
257 262 267 272	
act gga gat aaa cca tat aaa tgt gat cag tgt gga aaa ggc ttc att	1041
Thr Gly Asp Lys Pro Tyr Lys Cys Asp Gln Cys Gly Lys Gly Phe Ile	
273 278 283 288	
gag ggt cca tct ctt act caa cat caa aga att cat act gga gaa aaa	1089
Glu Gly Pro Ser Leu Thr Gln His Gln Arg Ile His Thr Gly Glu Lys	
289 294 299 304	
cca tat aaa tgt gat gaa tgt ggg aaa gcc ttt agt cag agg acc cat	1137
Pro Tyr Lys Cys Asp Glu Cys Gly Lys Ala Phe Ser Gln Arg Thr His	
305 310 315 320	
ctt gtt cag cat cag aga att cat act ggc gag aag cca tac act tgt	1185
Leu Val Gln His Gln Arg Ile His Thr Gly Glu Lys Pro Tyr Thr Cys	

321	326	331	336	
aat gag tgt gga aaa gcc ttt agc cag aga ggc cac ttt atg gaa cat				1233
Asn Glu Cys Gly Lys Ala Phe Ser Gln Arg Gly His Phe Met Glu His				
337	342	347	352	
cag aaa att cat acg gga gaa aaa cct ttt aaa tgt gat gaa tgt gat				1281
Gln Lys Ile His Thr Gly Glu Lys Pro Phe Lys Cys Asp Glu Cys Asp				
353	358	363	368	
aaa acc ttc acc agg agc aca cac ctt act caa cat caa aaa att cat				1329
Lys Thr Phe Thr Arg Ser Thr His Leu Thr Gln His Gln Lys Ile His				
369	374	379	384	
act gga gaa aaa acc tat aaa tgt aat gaa tgt gga aag gcc ttc aac				1377
Thr Gly Glu Lys Thr Tyr Lys Cys Asn Glu Cys Gly Lys Ala Phe Asn				
385	390	395	400	
ggg ccc tca act ttt atc cgt cat cat atg att cat act ggt gaa aaa				1425
Gly Pro Ser Thr Phe Ile Arg His His Met Ile His Thr Gly Glu Lys				
401	406	411	416	
ccg tac gaa tgc aat gaa tgt ggg aaa gcc ttc agc cag cac tca aac				1473
Pro Tyr Glu Cys Asn Glu Cys Gly Lys Ala Phe Ser Gln His Ser Asn				
417	422	427	432	
ctc act cag cat caa aaa act cat act ggg gag aaa ccc tat gat tgt				1521
Leu Thr Gln His Gln Lys Thr His Thr Gly Glu Lys Pro Tyr Asp Cys				
433	438	443	448	
gca gaa tgt gga aaa tct ttt agt tac tgg tca tcc ctt gct caa cac				1569
Ala Glu Cys Gly Lys Ser Phe Ser Tyr Trp Ser Ser Leu Ala Gln His				
449	454	459	464	
ctg aaa att cat act gga gaa aaa cct tac aaa tgc aat gaa tgt gga				1617
Leu Lys Ile His Thr Gly Glu Lys Pro Tyr Lys Cys Asn Glu Cys Gly				
465	470	475	480	
aag gcc ttc agt tac tgc tca tcc ctt act caa cat cgg aga att cac				1665
Lys Ala Phe Ser Tyr Cys Ser Ser Leu Thr Gln His Arg Arg Ile His				
481	486	491	496	
acg aga gaa aag ccc ttt gaa tgc agt gaa tgt gga aag gct ttc agt				1713
Thr Arg Glu Lys Pro Phe Glu Cys Ser Glu Cys Gly Lys Ala Phe Ser				
497	502	507	512	
tat ctc tca aac ctt aat cag cat cag aaa act cat act caa gag aaa				1761
Tyr Leu Ser Asn Leu Asn Gln His Gln Lys Thr His Thr Gln Glu Lys				
513	518	523	528	
gct tat gaa tgt aaa gaa tgt ggg aaa gct ttt att cgg agt tca tct				1809
Ala Tyr Glu Cys Lys Glu Cys Gly Lys Ala Phe Ile Arg Ser Ser Ser				
529	534	539	544	
ctt gct aag cat gaa aga att cat act gga gag aaa ccc tat cag tgt				1857
Leu Ala Lys His Glu Arg Ile His Thr Gly Glu Lys Pro Tyr Gln Cys				
545	550	555	560	

cat gaa tgt ggg aaa acc ttc agt tat ggt tca tcc ctt att cag cat	1905
His Glu Cys Gly Lys Thr Phe Ser Tyr Gly Ser Ser Leu Ile Gln His	
561 566 571 576	
agg aag atc cat act gga gaa cga cct tac aag tgt aat gag tgt ggg	1953
Arg Lys Ile His Thr Gly Glu Arg Pro Tyr Lys Cys Asn Glu Cys Gly	
577 582 587 592	
aga gca ttc aac cag aac ata cac ctt aca cag cat aag aga att cat	2001
Arg Ala Phe Asn Gln Asn Ile His Leu Thr Gln His Lys Arg Ile His	
593 598 603 608	
aca gga gcc aag cct tat gag tgt gct gag tgt ggt <sup>1</sup> aaa gcc ttt cga	2049
Thr Gly Ala Lys Pro Tyr Glu Cys Ala Glu Cys Gly Lys Ala Phe Arg	
609 614 619 624	
cat tgt tca tct ctt gct caa cat caa aaa act cac aca gaa gaa aaa	2097
His Cys Ser Ser Leu Ala Gln His Gln Lys Thr His Thr Glu Glu Lys	
625 630 635 640	
ccc tac cag tgt aat aaa tgt gaa aag acc ttt agc cag agc tcc cat	2145
Pro Tyr Gln Cys Asn Lys Cys Glu Lys Thr Phe Ser Gln Ser Ser His	
641 646 651 656	
cta act cag cat caa cga att cac act ggg gag aag ccc tat aag tgc	2193
Leu Thr Gln His Gln Arg Ile His Thr Gly Glu Lys Pro Tyr Lys Cys	
657 662 667 672	
aat gaa tgt gac aaa gcc ttt agc cgg agc act cat ctg act gaa cat	2241
Asn Glu Cys Asp Lys Ala Phe Ser Arg Ser Thr His Leu Thr Glu His	
673 678 683 688	
cag aat act cat act gga gag aaa cct tat aac tgt aat gaa tgc aga	2289
Gln Asn Thr His Thr Gly Glu Lys Pro Tyr Asn Cys Asn Glu Cys Arg	
689 694 699 704	
aag act ttt agc cag agc aca tat ctc att cag cac cag aga att cat	2337
Lys Thr Phe Ser Gln Ser Thr Tyr Leu Ile Gln His Gln Arg Ile His	
705 710 715 720	
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Ser Gly Glu Lys Pro Phe Gly Cys Asn Asp Cys Gly Lys Ser Phe Arg	
721 726 731 736	
tat cgc tct gct ctc aac aaa cat cag aga ctg cat cct ggc ata tga	2433
Tyr Arg Ser Ala Leu Asn Lys His Gln Arg Leu His Pro Gly Ile *	
737 742 747 752	
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tgacattaga aaactctact gttttaagct ttagtttcoct ttatggaatg aaggctttgg	2673

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 ttcccgctcc ccgcgtcct ccgcccgggt ccgccagccg aggcgcgtcc cgagcgctcg 180  
 aag atg ccg gcc gtg tcc aag ggg gac ggg atg cgg ggc ctg gcg gtc 228  
 Met Pro Ala Val Ser Lys Gly Asp Gly Met Arg Gly Leu Ala Val  
 1 5 10  
 ttc atc tcg gat atc cgc aac tgt aaa agt aaa gaa gca gaa ata aaa 276  
 Phe Ile Ser Asp Ile Arg Asn Cys Lys Ser Lys Glu Ala Glu Ile Lys  
 16 21 26 31  
 agg ata aac aag gaa ctg gca aat atc aga tca aaa ttt aaa ggt gac 324  
 Arg Ile Asn Lys Glu Leu Ala Asn Ile Arg Ser Lys Phe Lys Gly Asp  
 32 37 42 47  
 aag gct ctt gat ggc tat agt aaa aaa aag tac gtc tgc aag ttg ctc 372  
 Lys Ala Leu Asp Gly Tyr Ser Lys Lys Lys Tyr Val Cys Lys Leu Leu  
 48 53 58 63  
 ttc atc ttt ctc ctt ggt cat gac att gac ttt gga cac atg gag gct 420  
 Phe Ile Phe Leu Leu Gly His Asp Ile Asp Phe Gly His Met Glu Ala  
 64 69 74 79  
 gtg aac ctg ctg agt tca aac aga tac acg gaa aag cag atc ggc tac 468  
 Val Asn Leu Leu Ser Ser Asn Arg Tyr Thr Glu Lys Gln Ile Gly Tyr  
 80 85 90 95  
 ctt ttc atc tct gtg ttg gtg aac tca aac agt gag ctg atc cgc ctg 516  
 Leu Phe Ile Ser Val Leu Val Asn Ser Asn Ser Glu Leu Ile Arg Leu  
 96 101 106 111

atc aac aac gcc atc aag aat gac ctg gcc agc cgc aac ccc acc ttc	564
Ile Asn Asn Ala Ile Lys Asn Asp Leu Ala Ser Arg Asn Pro Thr Phe	
112 117 122 127	
atg ggc ctg gcc ctg cac tgc atc gcc agc gtg ggc agc cgg gag atg	612
Met Gly Leu Ala Leu His Cys Ile Ala Ser Val Gly Ser Arg Glu Met	
128 133 138 143	
gcc gag gcc ttc gcc ggg gag atc cct aag gtc ctc gta gcc gga gac	660
Ala Glu Ala Phe Ala Gly Glu Ile Pro Lys Val Leu Val Ala Gly Asp	
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act atg gac agc gtg aag cag agc gcg gcc ctg tgc ttg ctg cgc ctg	708
Thr Met Asp Ser Val Lys Gln Ser Ala Ala Leu Cys Leu Leu Arg Leu	
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tac agg acg tcc ccc gat ctt gtc ccc atg ggc gac tgg aca tcc cga	756
Tyr Arg Thr Ser Pro Asp Leu Val Pro Met Gly Asp Trp Thr Ser Arg	
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Val Val His Leu Leu Asn Asp Gln His Leu Gly Val Val Thr Ala Ala	
192 197 202 207	
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Thr Ser Leu Ile Thr Thr Leu Ala Gln Lys Asn Pro Glu Glu Phe Lys	
208 213 218 223	
acc tcc gtg tct ctg gct gtc tct agg cta agc aga atc gtg acg tct	900
Thr Ser Val Ser Leu Ala Val Ser Arg Leu Ser Arg Ile Val Thr Ser	
224 229 234 239	
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Ala Ser Thr Asp Leu Gln Asp Tyr Thr Tyr Tyr Phe Val Pro Ala Pro	
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Trp Leu Ser Val Lys Leu Leu Arg Leu Leu Gln Cys Tyr Pro Pro Pro	
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Asp Pro Ala Val Arg Gly Arg Leu Thr Glu Cys Leu Glu Thr Ile Leu	
272 277 282 287	
aac aaa gcc caa gaa ccg ccc aag tcg aag aag gtc cag cac tcc aac	1092
Asn Lys Ala Gln Glu Pro Pro Lys Ser Lys Lys Val Gln His Ser Asn	
288 293 298 303	
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Ala Lys Asn Ala Val Leu Phe Glu Ala Ile Ser Leu Ile Ile His His	
304 309 314 319	
gac agt gag ccg aac ctg ctc gtc cgt gcc tgc aac cag ttg ggc cag	1188
Asp Ser Glu Pro Asn Leu Leu Val Arg Ala Cys Asn Gln Leu Gly Gln	
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336					341					346					351		
atg	tgc	acg	ctg	gcc	agc	tct	gag	ttc	tcc	cat	gag	gct	gtc	aag	acg	1284	
Met	Cys	Thr	Leu	Ala	Ser	Ser	Glu	Phe	Ser	His	Glu	Ala	Val	Lys	Thr		
352					357					362					367		
cac	atc	gag	acg	gtc	atc	aac	gcc	ctg	aag	act	gag	cgg	gac	gtg	agc	1332	
His	Ile	Glu	Thr	Val	Ile	Asn	Ala	Leu	Lys	Thr	Glu	Arg	Asp	Val	Ser		
368					373					378					383		
gtg	cgg	cag	cgg	gcc	gtg	gac	ctc	ctc	tac	gcc	atg	tgc	gac	cgc	agc	1380	
Val	Arg	Gln	Arg	Ala	Val	Asp	Leu	Leu	Tyr	Ala	Met	Cys	Asp	Arg	Ser		
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aac	gcc	cca	cag	atc	gtg	gcc	gag	atg	ctg	agc	tat	ctg	gag	aca	gct	1428	
Asn	Ala	Pro	Gln	Ile	Val	Ala	Glu	Met	Leu	Ser	Tyr	Leu	Glu	Thr	Ala		
400					405					410					415		
gac	tac	tcc	atc	cga	gaa	gag	att	gtg	ctg	aag	gtc	gcc	atc	ctg	gct	1476	
Asp	Tyr	Ser	Ile	Arg	Glu	Glu	Ile	Val	Leu	Lys	Val	Ala	Ile	Leu	Ala		
416					421					426					431		
gag	aag	tac	gcg	gtg	gac	tac	acc	tgg	tat	gtg	gat	acc	atc	ttg	aac	1524	
Glu	Lys	Tyr	Ala	Val	Asp	Tyr	Thr	Trp	Tyr	Val	Asp	Thr	Ile	Leu	Asn		
432					437					442					447		
ttg	atc	cga	att	gct	ggg	gat	tac	gtg	agt	gaa	gag	gtg	tgg	tac	cga	1572	
Leu	Ile	Arg	Ile	Ala	Gly	Asp	Tyr	Val	Ser	Glu	Glu	Val	Trp	Tyr	Arg		
448					453					458					463		
gtc	att	cag	atc	gtc	atc	aac	cgg	gac	gac	gtg	cag	ggc	tac	gcg	gcc	1620	
Val	Ile	Gln	Ile	Val	Ile	Asn	Arg	Asp	Asp	Val	Gln	Gly	Tyr	Ala	Ala		
464					469					474					479		
aag	act	gtg	ttc	gag	gct	ctt	cag	gct	ccc	gcg	tgc	cac	gag	aac	ctg	1668	
Lys	Thr	Val	Phe	Glu	Ala	Leu	Gln	Ala	Pro	Ala	Cys	His	Glu	Asn	Leu		
480					485					490					495		
gtc	aaa	gtg	ggc	ggc	tac	atc	ctg	ggg	gag	ttt	gga	aac	ttg	ata	gct	1716	
Val	Lys	Val	Gly	Gly	Tyr	Ile	Leu	Gly	Glu	Phe	Gly	Asn	Leu	Ile	Ala		
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gga	gac	ccg	aga	tcc	agc	ccg	ctg	atc	cag	ttc	cac	ctg	ctg	cac	tcc	1764	
Gly	Asp	Pro	Arg	Ser	Ser	Pro	Leu	Ile	Gln	Phe	His	Leu	Leu	His	Ser		
512					517					522					527		
aag	ttc	cac	ctg	tgc	agc	gtc	ccc	acc	cgc	gcg	ctg	ctc	ctg	tcc	acc	1812	
Lys	Phe	His	Leu	Cys	Ser	Val	Pro	Thr	Arg	Ala	Leu	Leu	Leu	Ser	Thr		
528					533					538					543		
tac	atc	aag	ttc	gtg	aac	ctc	ttc	ccg	gag	gtg	aag	ccc	acc	atc	cag	1860	
Tyr	Ile	Lys	Phe	Val	Asn	Leu	Phe	Pro	Glu	Val	Lys	Pro	Thr	Ile	Gln		
544					549					554					559		
gac	gtg	ctg	cgc	agc	gac	agc	cag	ctc	agg	aac	gca	gac	gtg	gag	ctg	1908	
Asp	Val	Leu	Arg	Ser	Asp	Ser	Gln	Leu	Arg	Asn	Ala	Asp	Val	Glu	Leu		

560	565	570	575	
cag cag cgt gct gtg gag tac ctg cgg ctc	agc acc gtg gcc agc acc	1956		
Gln Gln Arg Ala Val Glu Tyr Leu Arg Leu Ser Thr Val Ala Ser Thr				
576	581	586	591	
gac att ctg gcg acc gtg ctg gag gag atg ccc cca ttc ccg gag cgg		2004		
Asp Ile Leu Ala Thr Val Leu Glu Glu Met Pro Pro Phe Pro Glu Arg				
592	597	602	607	
gag tcc tcc atc ttg gca aag ctc aag aag aag aag ggc ccc agc acg		2052		
Glu Ser Ser Ile Leu Ala Lys Leu Lys Lys Lys Lys Gly Pro Ser Thr				
608	613	618	623	
gtg aca gac ctg gag gac acc aag cgg gac agg agt gtg gac gtg aac		2100		
Val Thr Asp Leu Glu Asp Thr Lys Arg Asp Arg Ser Val Asp Val Asn				
624	629	634	639	
ggg ggt cct gag cct gcc cca gcc agt acc agc gcc gtg tct acg cct		2148		
Gly Gly Pro Glu Pro Ala Pro Ala Ser Thr Ser Ala Val Ser Thr Pro				
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tct ccg tcg gca gac ctg ctg ggt ctc ggg gct gcc ccc cct gcc ccc		2196		
Ser Pro Ser Ala Asp Leu Leu Gly Leu Gly Ala Ala Pro Pro Ala Pro				
656	661	666	671	
gcg ggc ccc cca ccc tcc tcc ggc ggc agc ggg ctg ctc gtg gac gtg		2244		
Ala Gly Pro Pro Pro Ser Ser Gly Gly Ser Gly Leu Leu Val Asp Val				
672	677	682	687	
ttc tca gac tcg gcc tct gtg gtc gcg cct ctc gct cct ggc tcc gaa		2292		
Phe Ser Asp Ser Ala Ser Val Val Ala Pro Leu Ala Pro Gly Ser Glu				
688	693	698	703	
gac aac ttt gcc agg ttt gtt tgt aaa aac aat ggt gtg ttg ttt gaa		2340		
Asp Asn Phe Ala Arg Phe Val Cys Lys Asn Asn Gly Val Leu Phe Glu				
704	709	714	719	
aac cag ctg ctt caa att gga ctt aag tct gaa ttt cgg cag aat tta		2388		
Asn Gln Leu Leu Gln Ile Gly Leu Lys Ser Glu Phe Arg Gln Asn Leu				
720	725	730	735	
ggg cgg atg ttt atc ttt tat ggt aat aag acc tcc acg cag ttc cta		2436		
Gly Arg Met Phe Ile Phe Tyr Gly Asn Lys Thr Ser Thr Gln Phe Leu				
736	741	746	751	
aac ttt acc cca aca cta atc tgt tca gac gac ctt cag cct aac ctg		2484		
Asn Phe Thr Pro Thr Leu Ile Cys Ser Asp Asp Leu Gln Pro Asn Leu				
752	757	762	767	
aac ctg cag acc aag ccc gtg gac ccg acc gtg gag ggg ggc gcg cag		2532		
Asn Leu Gln Thr Lys Pro Val Asp Pro Thr Val Glu Gly Gly Ala Gln				
768	773	778	783	
gtg cag cag gtg gtc aac ata gag tgc gtg tcc gac ttc acg gag gcg		2580		
Val Gln Gln Val Val Asn Ile Glu Cys Val Ser Asp Phe Thr Glu Ala				
784	789	794	799	

cca gtc ctc aac att cag ttc agg tat ggg ggc acc ttc cag aac gtg	2628
Pro Val Leu Asn Ile Gln Phe Arg Tyr Gly Gly Thr Phe Gln Asn Val	
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Ser Val Gln Leu Pro Ile Thr Leu Asn Lys Phe Phe Gln Pro Thr Glu	
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atg gct tct cag gat ttc ttt caa cgt tgg aag cag ttg agc aat cca	2724
Met Ala Ser Gln Asp Phe Phe Gln Arg Trp Lys Gln Leu Ser Asn Pro	
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cag cag gaa gtg cag aac atc ttc aaa gca aag cac cca atg gac aca	2772
Gln Gln Glu Val Gln Asn Ile Phe Lys Ala Lys His Pro Met Asp Thr	
848 853 858 863	
gaa gtc acc aaa gcc aag atc att gga ttt ggt tct gca ctt ctt gaa	2820
Glu Val Thr Lys Ala Lys Ile Ile Gly Phe Gly Ser Ala Leu Leu Glu	
864 869 874 879	
gaa gtt gat cct aat cct gcg aat ttc gtg gga gct gga atc atc cac	2868
Glu Val Asp Pro Asn Pro Ala Asn Phe Val Gly Ala Gly Ile Ile His	
880 885 890 895	
acg aaa acc acc cag att gga tgc ctg ctg cgc ttg gag ccg aac ctg	2916
Thr Lys Thr Thr Gln Ile Gly Cys Leu Leu Arg Leu Glu Pro Asn Leu	
896 901 906 911	
caa gcc cag atg tac cgg ctc acg ctg cgc aca agt aag gaa gcc gtt	2964
Gln Ala Gln Met Tyr Arg Leu Thr Leu Arg Thr Ser Lys Glu Ala Val	
912 917 922 927	
tct cag aga tta tgt gaa ttg ctc tca gcg cag ttt tag tcctgaggat	3013
Ser Gln Arg Leu Cys Glu Leu Leu Ser Ala Gln Phe *	
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Met Ser Leu Ser Pro Pro Cys Phe Thr Glu Glu Asp Arg Phe Ser Leu	

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Glu Ala Leu Gln Thr Ile His Lys Gln Met Asp Asp Asp Lys Asp Gly				
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gga att gaa gta gag gaa agt gat gaa ttc atc aga gaa gat atg aaa				261
Gly Ile Glu Val Glu Glu Ser Asp Glu Phe Ile Arg Glu Asp Met Lys				
33	38	43	48	
tat aaa gat gct act aat aaa cac agc cat ctg cac aga gaa gat aaa				309
Tyr Lys Asp Ala Thr Asn Lys His Ser His Leu His Arg Glu Asp Lys				
49	54	59	64	
cat ata acg att gag gat tta tgg aaa cga tgg aaa aca tca gaa gtt				357
His Ile Thr Ile Glu Asp Leu Trp Lys Arg Trp Lys Thr Ser Glu Val				
65	70	75	80	
cat aat tgg acc ctt gaa gac act ctt cag tgg ttg ata gag ttt gtt				405
His Asn Trp Thr Leu Glu Asp Thr Leu Gln Trp Leu Ile Glu Phe Val				
81	86	91	96	
gaa cta ccc caa tat gag aag aat ttt aga gac aac aat gtc aaa gga				453
Glu Leu Pro Gln Tyr Glu Lys Asn Phe Arg Asp Asn Asn Val Lys Gly				
97	102	107	112	
acg aca ctt ccc agg ata gca gtg cac gaa cct tca ttt atg atc tcc				501
Thr Thr Leu Pro Arg Ile Ala Val His Glu Pro Ser Phe Met Ile Ser				
113	118	123	128	
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Gln Leu Lys Ile Ser Asp Arg Ser His Arg Gln Lys Leu Gln Leu Lys				
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Ala Leu Asp Val Val Leu Phe Gly Pro Leu Thr Arg Pro Pro His Asn				
145	150	155	160	
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Trp Met Lys Asp Phe Ile Leu Thr Val Ser Ile Val Ile Gly Val Gly				
161	166	171	176	
ggc tgc tgg ttt gct tat acg cag aat aag aca tca aaa gaa cat gtt				693
Gly Cys Trp Phe Ala Tyr Thr Gln Asn Lys Thr Ser Lys Glu His Val				
177	182	187	192	
gca aaa atg atg aaa gat tta gag agc tta caa act gca gag caa agt				741
Ala Lys Met Met Lys Asp Leu Glu Ser Leu Gln Thr Ala Glu Gln Ser				
193	198	203	208	
cta atg gac tta caa gag agg ctt gaa aag gca cag gaa gaa aac aga				789
Leu Met Asp Leu Gln Glu Arg Leu Glu Lys Ala Gln Glu Glu Asn Arg				
209	214	219	224	
aat gtt gct gta gaa aag caa aat tta gag cgc aaa atg atg gat gaa				837
Asn Val Ala Val Glu Lys Gln Asn Leu Glu Arg Lys Met Met Asp Glu				
225	230	235	240	

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Ile Asn Tyr Ala Lys Glu Glu Ala Cys Arg Leu Arg Glu Leu Arg Glu	
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Gly Ala Glu Cys Glu Leu Ser Arg Arg Gln Tyr Ala Glu Gln Glu Leu	
257 262 267 272	
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Glu Gln Val Arg Met Ala Leu Lys Lys Ala Glu Lys Glu Phe Glu Leu	
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aga agc agt tgg tct gtt cca gat gca ctt cag aaa tgg ctt cag tta	1029
Arg Ser Ser Trp Ser Val Pro Asp Ala Leu Gln Lys Trp Leu Gln Leu	
289 294 299 304	
aca cat gaa gta gaa gtg caa tac tac aat att aaa aga caa aac gct	1077
Thr His Glu Val Glu Val Gln Tyr Tyr Asn Ile Lys Arg Gln Asn Ala	
305 310 315 320	
gaa atg cag cta gct att gct aaa gat gag gca gaa aaa att aaa aag	1125
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321 326 331 336	
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Lys Arg Ser Thr Val Phe Gly Thr Leu His Val Ala His Ser Ser Ser	
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Leu Asp Glu Val Asp His Lys Ile Leu Glu Ala Lys Lys Ala Leu Ser	
353 358 363 368	
gag ttg aca act tgt tta cga gaa cga ctt ttt cgc tgg caa caa att	1269
Glu Leu Thr Thr Cys Leu Arg Glu Arg Leu Phe Arg Trp Gln Gln Ile	
369 374 379 384	
gag aag atc tgt ggc ttt cag ata gcc cat aac tca gga ctc ccc agc	1317
Glu Lys Ile Cys Gly Phe Gln Ile Ala His Asn Ser Gly Leu Pro Ser	
385 390 395 400	
ctg acc tct tcc ctt tat tct gat cac agc tgg gtg gtg atg ccc aga	1365
Leu Thr Ser Ser Leu Tyr Ser Asp His Ser Trp Val Val Met Pro Arg	
401 406 411 416	
gtc tcc att cca ccc tat cca att gct gga gga gtt gat gac tta gat	1413
Val Ser Ile Pro Pro Tyr Pro Ile Ala Gly Gly Val Asp Asp Leu Asp	
417 422 427 432	
gaa gac aca ccc cca ata gtg tca caa ttt ccc ggg acc atg gct aaa	1461
Glu Asp Thr Pro Pro Ile Val Ser Gln Phe Pro Gly Thr Met Ala Lys	
433 438 443 448	
cct cct gga tca tta gcc aga agc agc agc ctg tgc cgt tca cgc cgc	1509
Pro Pro Gly Ser Leu Ala Arg Ser Ser Ser Leu Cys Arg Ser Arg Arg	
449 454 459 464	

agc att gtg ccg tcc tcg cct cag cct cag cga gct cag ctt gct cca	1557
Ser Ile Val Pro Ser Ser Pro Gln Pro Gln Arg Ala Gln Leu Ala Pro	
465 470 475 480	
cac gcc ccc cac ccg tca cac cct cgg cac cct cac cac ccg caa cac	1605
His Ala Pro His Pro Ser His Pro Arg His Pro His His Pro Gln His	
481 486 491 496	
aca cca cac tcc ttg cct tcc cct gat cca gat atc ctc tca gtg tca	1653
Thr Pro His Ser Leu Pro Ser Pro Asp Pro Asp Ile Leu Ser Val Ser	
497 502 507 512	
agt tgc cct gcg ctt tat cga aat gaa gag gag gaa gag gcc att tac	1701
Ser Cys Pro Ala Leu Tyr Arg Asn Glu Glu Glu Glu Glu Ala Ile Tyr	
513 518 523 528	
ttc tct gct gaa aag caa tgg aac aca agg gag tgt gca gtt gga gac	1749
Phe Ser Ala Glu Lys Gln Trp Asn Thr Arg Glu Cys Ala Val Gly Asp	
529 534 539 544	
agc cag gga cca cat gta cac ggc ctg gta cgc ttt gac aag gac ttt	1797
Ser Gln Gly Pro His Val His Gly Leu Val Arg Phe Asp Lys Asp Phe	
545 550 555 560	
gga tct tac tct gag tat gag aga aag cac tgg gaa gtt tca atg cca	1845
Gly Ser Tyr Ser Glu Tyr Glu Arg Lys His Trp Glu Val Ser Met Pro	
561 566 571 576	
gac aca gct tca gaa tgt gac tcc tta aat tct tcc att gga agg aaa	1893
Asp Thr Ala Ser Glu Cys Asp Ser Leu Asn Ser Ser Ile Gly Arg Lys	
577 582 587 592	
cag tct cct cct tta agc ctc gag ata tac caa aca tta tct ccg cga	1941
Gln Ser Pro Pro Leu Ser Leu Glu Ile Tyr Gln Thr Leu Ser Pro Arg	
593 598 603 608	
aag ata tca aga gat gag gtg tcc cta gag gat tcc tcc cga ggg gat	1989
Lys Ile Ser Arg Asp Glu Val Ser Leu Glu Asp Ser Ser Arg Gly Asp	
609 614 619 624	
tcg cct gta act gtg gat gtg tct tgg ggt tct ccc gac tgt gta ggt	2037
Ser Pro Val Thr Val Asp Val Ser Trp Gly Ser Pro Asp Cys Val Gly	
625 630 635 640	
ctg aca gaa act aag agt atg atc ttc agt cct gca agc aaa gtg tac	2085
Leu Thr Glu Thr Lys Ser Met Ile Phe Ser Pro Ala Ser Lys Val Tyr	
641 646 651 656	
aat ggc att ttg gag aaa tcc tgt agc atg aac cag ctt tcc agt ggc	2133
Asn Gly Ile Leu Glu Lys Ser Cys Ser Met Asn Gln Leu Ser Ser Gly	
657 662 667 672	
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Ile Pro Val Pro Lys Pro Arg His Thr Ser Cys Ser Ser Ala Gly Asn	
673 678 683 688	
gac agt aaa cca gtt cag gaa gcc cca agt gtt gcc aga ata agc agc	2229

Asp	Ser	Lys	Pro	Val	Gln	Glu	Ala	Pro	Ser	Val	Ala	Arg	Ile	Ser	Ser		
689					694					699					704		
atc	cca	cat	gac	ctt	tgt	cat	aat	gga	gag	aaa	agc	aaa	aag	cca	tca	2277	
Ile	Pro	His	Asp	Leu	Cys	His	Asn	Gly	Glu	Lys	Ser	Lys	Lys	Pro	Ser		
705					710					715					720		
aaa	atc	aaa	agc	ctt	ttt	aag	aag	aaa	tct	aag	tga	actg	gctgacttga			2327	
Lys	Ile	Lys	Ser	Leu	Phe	Lys	Lys	Lys	Ser	Lys	*						
721					726					731							
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tgt ttt tct agt ata cat gtt aaa acg gat aaa cat gca cag cga ttt	96
Cys Phe Ser Ser Ile His Val Lys Thr Asp Lys His Ala Gln Arg Phe	
17 22 27 32	
ctt tca aga acc ttt gca ctt gcg gaa ttg agg aag tca tgg tat tca	144
Leu Ser Arg Thr Phe Ala Leu Ala Glu Leu Arg Lys Ser Trp Tyr Ser	
33 38 43 48	
acc cac tct ctt gtt gga gac aaa aat att atc ctg atg gga cct cct	192
Thr His Ser Leu Val Gly Asp Lys Asn Ile Ile Leu Met Gly Pro Pro	
49 54 59 64	
ggg gct ggg aaa aca aca gta ggc aga ata ata ggt cag aaa cta ggt	240
Gly Ala Gly Lys Thr Thr Val Gly Arg Ile Ile Gly Gln Lys Leu Gly	
65 70 75 80	
tgt tgt gtc ata gat gtg gat gat gat atc ctt gaa aaa acc tgg aat	288
Cys Cys Val Ile Asp Val Asp Asp Asp Ile Leu Glu Lys Thr Trp Asn	
81 86 91 96	
atg agt gtg tct gaa aaa tta cag gat gtt ggt aat gag caa ttt tta	336
Met Ser Val Ser Glu Lys Leu Gln Asp Val Gly Asn Glu Gln Phe Leu	
97 102 107 112	
gaa gag gaa gga aaa gct gtg tta aac ttc tct gca tct gga agt gtg	384
Glu Glu Glu Gly Lys Ala Val Leu Asn Phe Ser Ala Ser Gly Ser Val	
113 118 123 128	
att tcc ctt act ggg tcc aat cca atg cat gat gct agc atg tgg cat	432
Ile Ser Leu Thr Gly Ser Asn Pro Met His Asp Ala Ser Met Trp His	
129 134 139 144	
ctg aag aaa aat gga ata att gta tac ctg gat gta cct cta cta aat	480
Leu Lys Lys Asn Gly Ile Ile Val Tyr Leu Asp Val Pro Leu Leu Asn	
145 150 155 160	
cta att tgt cgt cta aaa tta atg aag aca gat agg att gta ggt cag	528
Leu Ile Cys Arg Leu Lys Leu Met Lys Thr Asp Arg Ile Val Gly Gln	
161 166 171 176	
aat tct gga aca tct atg aaa gac tta ctt aaa ttt aga aga cag tat	576
Asn Ser Gly Thr Ser Met Lys Asp Leu Leu Lys Phe Arg Arg Gln Tyr	
177 182 187 192	
tat aag aag tgg tat gat gct cgt gtt ttc tgt gaa agt ggg gct tcc	624
Tyr Lys Lys Trp Tyr Asp Ala Arg Val Phe Cys Glu Ser Gly Ala Ser	
193 198 203 208	
cca gag gag gta gct gac aaa gtg ctg aat gca att aaa aga tac caa	672
Pro Glu Glu Val Ala Asp Lys Val Leu Asn Ala Ile Lys Arg Tyr Gln	
209 214 219 224	

gat gtg gac tcg gaa aca ttc att tca aca aga cac gtt tgg cct gaa	720
Asp Val Asp Ser Glu Thr Phe Ile Ser Thr Arg His Val Trp Pro Glu	
225 230 235 240	
gac tgt gaa cag aag gtt tca gca aaa ttc ttt agt gaa gct gta att	768
Asp Cys Glu Gln Lys Val Ser Ala Lys Phe Phe Ser Glu Ala Val Ile	
241 246 251 256	
gag ggg ttg gct tct gat ggt ggc ctc ttt gtt cct gca aag gag ttt	816
Glu Gly Leu Ala Ser Asp Gly Gly Leu Phe Val Pro Ala Lys Glu Phe	
257 262 267 272	
cca aaa tta agc tgc ggg gag tgg aaa agc cta gta gga gca acc tac	864
Pro Lys Leu Ser Cys Gly Glu Trp Lys Ser Leu Val Gly Ala Thr Tyr	
273 278 283 288	
gta gaa aga gca cag ata ctg ttg gaa aga tgt atc cat cct gca gac	912
Val Glu Arg Ala Gln Ile Leu Leu Glu Arg Cys Ile His Pro Ala Asp	
289 294 299 304	
ata cct gct gcc agg ttg gga gaa atg att gaa act gct tat ggg gaa	960
Ile Pro Ala Ala Arg Leu Gly Glu Met Ile Glu Thr Ala Tyr Gly Glu	
305 310 315 320	
aac ttt gcc tgc tca aaa att gct cct gtc agg cac ctt tca ggc aac	1008
Asn Phe Ala Cys Ser Lys Ile Ala Pro Val Arg His Leu Ser Gly Asn	
321 326 331 336	
cag ttc atc ctg gag ttg ttt cat gga cca aca gga tca ttt aaa gat	1056
Gln Phe Ile Leu Glu Leu Phe His Gly Pro Thr Gly Ser Phe Lys Asp	
337 342 347 352	
ttg tct tta cag ctt atg cct cat att ttt gca cac tgt atc cca cca	1104
Leu Ser Leu Gln Leu Met Pro His Ile Phe Ala His Cys Ile Pro Pro	
353 358 363 368	
agt tgc aat tat atg ata ctt gta gct act tca gga gac aca ggg agt	1152
Ser Cys Asn Tyr Met Ile Leu Val Ala Thr Ser Gly Asp Thr Gly Ser	
369 374 379 384	
gca gtc tta aat ggt ttt agt cgt cta aat aag aat gat aag caa agg	1200
Ala Val Leu Asn Gly Phe Ser Arg Leu Asn Lys Asn Asp Lys Gln Arg	
385 390 395 400	
ata gct gtg gtt gca ttt ttt cct gag aat gga gta agt gat ttt caa	1248
Ile Ala Val Val Ala Phe Phe Pro Glu Asn Gly Val Ser Asp Phe Gln	
401 406 411 416	
aaa gca caa ata att ggc agt cag aga gaa aat gga tgg gca gtg ggt	1296
Lys Ala Gln Ile Ile Gly Ser Gln Arg Glu Asn Gly Trp Ala Val Gly	
417 422 427 432	
gtt gag tca gat ttt gat ttt tgc cag aca gct ata aaa aga att ttt	1344
Val Glu Ser Asp Phe Asp Phe Cys Gln Thr Ala Ile Lys Arg Ile Phe	
433 438 443 448	
aat gat tct gat ttt act ggc ttt ctt act gtg gaa tat gga aca atc	1392





673	678	683	688	
tca agt cag ctc tat ttg ctg ggt tca tac aat gca tta cct cca ctg				2112
Ser Ser Gln Leu Tyr Leu Leu Gly Ser Tyr Asn Ala Leu Pro Pro Leu				
689	694	699	704	
cat gag gct tta tta gag aga aca aaa cag caa gag aag atg gag tac				2160
His Glu Ala Leu Leu Glu Arg Thr Lys Gln Gln Glu Lys Met Glu Tyr				
705	710	715	720	
cag gtc tgt gca gct gat atg aat gtc ttg aag agt cat gtg gaa caa				2208
Gln Val Cys Ala Ala Asp Met Asn Val Leu Lys Ser His Val Glu Gln				
721	726	731	736	
ctt gtc caa aat caa ttc ata tga aagctttcag agtaaatttt tttttctagc				2262
Leu Val Gln Asn Gln Phe Ile *				
737	742			
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tacagtgtta gctaagtttg gaaagaagga aaaaagaaaa tccctggggc ccttttcttt	180
tggtcctttgc caaagtcgtc gttgtagtct ttttgcccaa ggctgttggtg ttttttagagg	240
tgctatctcc agttccttgc actcctgtta acaagcacct cagcgagagc agcagcagcg	300
atagcagccg cagaagagcc agcgggggtcg cctagtgtc	354
atg acc agg gcg gga	
Met Thr Arg Ala Gly	
1	
gat cac aac cgc cag aga gga tgc tgt gga tcc ttg gcc gac tac ctg	402
Asp His Asn Arg Gln Arg Gly Cys Cys Gly Ser Leu Ala Asp Tyr Leu	
6 11 16 21	
acc tct gca aaa ttc ctt ctc tac ctt ggt cat tct ctc tct act tgg	450
Thr Ser Ala Lys Phe Leu Leu Tyr Leu Gly His Ser Leu Ser Thr Trp	
22 27 32 37	
gga gat cgg atg tgg cac ttt gcg gtg tct gtg ttt ctg gta gag ctc	498
Gly Asp Arg Met Trp His Phe Ala Val Ser Val Phe Leu Val Glu Leu	

38	43	48	53	
tat gga aac agc ctc ctt ttg aca gca gtc tac ggg ctg gtg gtg gca				546
Tyr Gly Asn Ser Leu	Leu Leu Thr Ala Val	Tyr Gly Leu Val Val Ala		
54	59	64	69	
ggg tct gtt ctg gtc ctg gga gcc atc atc ggt gac tgg gtg gac aag				594
Gly Ser Val Leu Val Leu Gly Ala Ile Ile Gly Asp Trp Val Asp Lys				
70	75	80	85	
aat gct aga ctt aaa gtg gcc cag acc tcg ctg gtg gta cag aat gtt				642
Asn Ala Arg Leu Lys Val Ala Gln Thr Ser Leu Val Val Gln Asn Val				
86	91	96	101	
tca gtc atc ctg tgt gga atc atc ctg atg atg gtt ttc tta cat aaa				690
Ser Val Ile Leu Cys Gly Ile Ile Leu Met Met Val Phe Leu His Lys				
102	107	112	117	
cat gag ctt ctg acc atg tac cat gga tgg gtt ctc act tcc tgc tat				738
His Glu Leu Leu Thr Met Tyr His Gly Trp Val Leu Thr Ser Cys Tyr				
118	123	128	133	
atc ctg atc atc act att gca aat att gca aat ttg gcc agt act gct				786
Ile Leu Ile Ile Thr Ile Ala Asn Ile Ala Asn Leu Ala Ser Thr Ala				
134	139	144	149	
act gca atc aca atc caa agg gat tgg att gtt gtt gtt gca gga gaa				834
Thr Ala Ile Thr Ile Gln Arg Asp Trp Ile Val Val Val Ala Gly Glu				
150	155	160	165	
gac aga agc aaa cta gca aat atg aat gcc aca ata cga agg att gac				882
Asp Arg Ser Lys Leu Ala Asn Met Asn Ala Thr Ile Arg Arg Ile Asp				
166	171	176	181	
cag tta acc aac atc tta gcc ccc atg gct gtt ggc cag att atg aca				930
Gln Leu Thr Asn Ile Leu Ala Pro Met Ala Val Gly Gln Ile Met Thr				
182	187	192	197	
ttt ggc tcc cca gtc atc ggc tgt ggc ttt att tcg gga tgg aac ttg				978
Phe Gly Ser Pro Val Ile Gly Cys Gly Phe Ile Ser Gly Trp Asn Leu				
198	203	208	213	
gta tcc atg tgc gtg gag tac gtt ctg ctc tgg aag gtt tac cag aaa				1026
Val Ser Met Cys Val Glu Tyr Val Leu Leu Trp Lys Val Tyr Gln Lys				
214	219	224	229	
acc cca gct cta gct gtg aaa gct ggt ctt aaa gaa gag gaa act gaa				1074
Thr Pro Ala Leu Ala Val Lys Ala Gly Leu Lys Glu Glu Glu Thr Glu				
230	235	240	245	
ttg aaa cag ctg aat tta cac aaa gat act gag cca aaa ccc ctg gag				1122
Leu Lys Gln Leu Asn Leu His Lys Asp Thr Glu Pro Lys Pro Leu Glu				
246	251	256	261	
gga act cat cta atg ggt gtg aaa gac tct aac atc cat gag ott gaa				1170
Gly Thr His Leu Met Gly Val Lys Asp Ser Asn Ile His Glu Leu Glu				
262	267	272	277	

cat gag caa gag cct act tgt gcc tcc cag atg gct gag ccc ttc cgt	1218
His Glu Gln Glu Pro Thr Cys Ala Ser Gln Met Ala Glu Pro Phe Arg	
278 283 288 293	
acc ttc cga gat gga tgg gtc tcc tac tac aac cag cct gtg ttt ctg	1266
Thr Phe Arg Asp Gly Trp Val Ser Tyr Tyr Asn Gln Pro Val Phe Leu	
294 299 304 309	
gct ggc atg ggt ctt gct ttc ctt tat atg act gtc ctg ggc ttt gac	1314
Ala Gly Met Gly Leu Ala Phe Leu Tyr Met Thr Val Leu Gly Phe Asp	
310 315 320 325	
tgc atc acc aca ggg tac gcc tac act cag gga ctg agt ggt tcc atc	1362
Cys Ile Thr Thr Gly Tyr Ala Tyr Thr Gln Gly Leu Ser Gly Ser Ile	
326 331 336 341	
ctc agt att ttg atg gga gca tca gct ata act gga ata atg gga act	1410
Leu Ser Ile Leu Met Gly Ala Ser Ala Ile Thr Gly Ile Met Gly Thr	
342 347 352 357	
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Val Ala Phe Thr Trp Leu Arg Arg Lys Cys Gly Leu Val Arg Thr Gly	
358 363 368 373	
ctg atc tca gga ttg gca cag ctt tcc tgt ttg atc ttg tgt gtg atc	1506
Leu Ile Ser Gly Leu Ala Gln Leu Ser Cys Leu Ile Leu Cys Val Ile	
374 379 384 389	
tct gta ttc atg cct gga agc ccc ctg gac ttg tcc gtt tct cct ttt	1554
Ser Val Phe Met Pro Gly Ser Pro Leu Asp Leu Ser Val Ser Pro Phe	
390 395 400 405	
gaa gat atc cga tca agg ttc att caa gga gag tca att aca cct acc	1602
Glu Asp Ile Arg Ser Arg Phe Ile Gln Gly Glu Ser Ile Thr Pro Thr	
406 411 416 421	
aag ata cct gaa att aca act gaa ata tac atg tct aat ggg tct aat	1650
Lys Ile Pro Glu Ile Thr Thr Glu Ile Tyr Met Ser Asn Gly Ser Asn	
422 427 432 437	
tct gct aat att gtc ccg gag aca agt cct gaa tct gtg ccc ata atc	1698
Ser Ala Asn Ile Val Pro Glu Thr Ser Pro Glu Ser Val Pro Ile Ile	
438 443 448 453	
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Ser Val Ser Leu Leu Phe Ala Gly Val Ile Ala Ala Arg Ile Gly Leu	
454 459 464 469	
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Trp Ser Phe Asp Leu Thr Val Thr Gln Leu Leu Gln Glu Asn Val Ile	
470 475 480 485	
gaa tct gaa aga ggc att ata aat ggt gta cag aac tcc atg aac tat	1842
Glu Ser Glu Arg Gly Ile Ile Asn Gly Val Gln Asn Ser Met Asn Tyr	
486 491 496 501	

ctt ctt gat ctt ctg cat ttc atc atg gtc atc ctg gct cca aat cct	1890
Leu Leu Asp Leu Leu His Phe Ile Met Val Ile Leu Ala Pro Asn Pro	
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gaa gct ttt ggc ttg ctc gta ttg att tca gtc tcc ttt gtg gca atg	1938
Glu Ala Phe Gly Leu Leu Val Leu Ile Ser Val Ser Phe Val Ala Met	
518 523 528 533	
ggc cac att atg tat ttc cga ttt gcc caa aat act ctg gga aac aag	1986
Gly His Ile Met Tyr Phe Arg Phe Ala Gln Asn Thr Leu Gly Asn Lys	
534 539 544 549	
ctc ttt gct tgc ggt cct gat gca aaa gaa gtt agg aag gaa aat caa	2034
Leu Phe Ala Cys Gly Pro Asp Ala Lys Glu Val Arg Lys Glu Asn Gln	
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cca ggt ctg atc tca gag ctg aag ctg gct gtg ccc tgg ggc cac atc 161  
 Pro Gly Leu Ile Ser Glu Leu Lys Leu Ala Val Pro Trp Gly His Ile  
 7 12 17 22

gca gcc aaa gcc tgg ggc tcc ctg cag ggc cct cca gtt ctc tgc ctg 209  
 Ala Ala Lys Ala Trp Gly Ser Leu Gln Gly Pro Pro Val Leu Cys Leu  
 23 28 33 38

cac ggc tgg ctg gac aat gcc aac tcc ttc gac aga ctc atc cct ctt 257  
 His Gly Trp Leu Asp Asn Ala Asn Ser Phe Asp Arg Leu Ile Pro Leu  
 39 44 49 54

ctc ccg caa gac ttt tat tac gtt gcc atg gat ttc gga ggt cat ggg 305  
 Leu Pro Gln Asp Phe Tyr Tyr Val Ala Met Asp Phe Gly Gly His Gly  
 55 60 65 70

ctc tcg tcc cat tac agc cca ggt gtc cca tat tac ctc cag act ttt 353  
 Leu Ser Ser His Tyr Ser Pro Gly Val Pro Tyr Tyr Leu Gln Thr Phe  
 71 76 81 86

gtg agt gag atc cga aga gtt gtg gca ggt aag aaa cag agt gtg tat 401  
 Val Ser Glu Ile Arg Arg Val Val Ala Gly Lys Lys Gln Ser Val Tyr  
 87 92 97 102

ttt cgg cgg tgt ggg ggg tgc tct agg gca ccc cct ctt atc act gga 449  
 Phe Arg Arg Cys Gly Gly Cys Ser Arg Ala Pro Pro Leu Ile Thr Gly  
 103 108 113 118

ggc ggg gta gga tcc agg aag cag cgc tgg cct gag agt ggg gcc tgg 497

Gly	Gly	Val	Gly	Ser	Arg	Lys	Gln	Arg	Trp	Pro	Glu	Ser	Gly	Ala	Trp	
119					124					129					134	

gct	ctg	gcc	cca	ggg	ctg	cca	gca	att	cac	ggg	aga	tct	tgg	gaa	agt	545
Ala	Leu	Ala	Pro	Gly	Leu	Pro	Ala	Ile	His	Gly	Arg	Ser	Trp	Glu	Ser	
135					140					145					150	

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151							

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tcttttgtcc	cccaggtggc	gtcgtggacg	gaatggtgag	tagatggctt	tgtctggcca	1142
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			120
tgtgagaccc	tggccccgcc	cccgcggcca	gccccgcca
		ccgagccccg	ccctcgccag
			180
gaccaacctc	gcgggggattt	tggtgaaaa	tgaaccggg
		taacggctcc	tgggcctctc
			240
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		tctcggaccc	agagactcgg
			300
ggagaccgg	gcggtccgtg	gggg	atg tgg agg ggt
			agt gac ctg cgc ccc
			351
			Met Trp Arg Gly Ser Asp Leu Arg Pro
			1 5

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Arg Pro Val Ser Leu Thr Gly Leu Thr Leu Val Val Val Ala Ala Gln	
10 15 20 25	
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Gly Pro Gln Val His Ser Val Lys Leu Cys Phe Gly Leu Gly Gly Pro	
26 31 36 41	
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Cys Leu Leu Phe Pro Ile Phe Arg Pro Leu Leu Leu His Pro Arg Arg	
42 47 52 57	
ccg cgg ctc cat cct ggg act cgt ggc gtc gct gtc gag ccg cac gca	543
Pro Arg Leu His Pro Gly Thr Arg Gly Val Ala Val Glu Pro His Ala	
58 63 68 73	
ctg cgt gtc gtc cac gtc gcc cac gga gag gaa gcg ggg atc cgc gcg	591
Leu Arg Val Val His Val Ala His Gly Glu Glu Ala Gly Ile Arg Ala	
74 79 84 89	
gcc ggg ccg gga cat ggt ggt gtg gaa ata cct caa gga gta agc ctg	639
Ala Gly Pro Gly His Gly Gly Val Glu Ile Pro Gln Gly Val Ser Leu	
90 95 100 105	
gga gca agg agg ggg ctg aga ccc tcc cga ccc tcc tcc cgg cac cgc	687
Gly Ala Arg Arg Gly Leu Arg Pro Ser Arg Pro Ser Ser Arg His Arg	
106 111 116 121	
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Asn Arg Val Pro Ala Pro Pro Pro Gly Arg Pro Leu Ala Thr Pro His	
122 127 132 137	
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Arg Arg Arg Phe Pro Pro Asp Pro Ala Leu Thr Cys Pro Gly Leu Gly	
138 143 148 153	
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Gln Asp Gln Gly Pro Arg Glu Gln Gln Lys Gln Gly Ser Gly Arg His	
154 159 164 169	
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Asp Thr Ile Leu Gly Asp Trp Glu Glu Ser Glu Ser Arg Trp Val Arg	
170 175 180 185	
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Gly Asn Phe Arg Thr Gly Thr Ala Ala Thr Leu Ile Gly Phe Ser Arg	
186 191 196 201	
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Asn Pro Thr Leu Asn Gly Ser Glu Asn Trp Gly Ser Pro Val Ser Thr	
202 207 212 217	
cag gaa gaa gga ccc gac aca ggt tgg gag agg gag aag aga aac cct	1023
Gln Glu Glu Gly Pro Asp Thr Gly Trp Glu Arg Glu Lys Arg Asn Pro	
218 223 228 233	

gca aag atg ggg aat gcc cag cgc tgg gcc tcc cca atc cat aca ccg	1071
Ala Lys Met Gly Asn Ala Gln Arg Trp Ala Ser Pro Ile His Thr Pro	
234 239 244 249	
cct ttg ggg cct gag atc ctg aga gcc acg cct gag gcc ctg gga ctt	1119
Pro Leu Gly Pro Glu Ile Leu Arg Ala Thr Pro Glu Ala Leu Gly Leu	
250 255 260 265	
cgc cct gac ccc gct act tct gtg cca agc gct ctg tct caa tgt ttc	1167
Arg Pro Asp Pro Ala Thr Ser Val Pro Ser Ala Leu Ser Gln Cys Phe	
266 271 276 281	
cct gag tct tgg ccc agg agc tgt ctg aga aac cag gga gaa acc ctc	1215
Pro Glu Ser Trp Pro Arg Ser Cys Leu Arg Asn Gln Gly Glu Thr Leu	
282 287 292 297	
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Gly Met Gly Pro Val Pro Leu Ser Ser Leu Cys Ile Thr Glu Ser Pro	
298 303 308 313	
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Ser Gln Asn Trp Thr Pro Cys Leu Leu Leu Leu Thr Cys Pro Arg Gly	
314 319 324 329	
ctc ttc tag aagaaaa atcacccag ggagcttggt gccagagagt gagcttgccc	1367
Leu Phe *	
330	
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tggaaggtt gtgcctgagt gcatgagata gaatagagac cagtttgctt tttgtttatt	1487
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taaacctgat taacataaaa aaattagttt ttaggcagac ccacataagg tattaaaggc	1967
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<212> DNA  
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gtttctaaga aaagcaactg aaaaggctcg aataccgccc ctgagaaaaa aggagcagcg      180
ctaaataatc gagaaaatgc ctctctttga aacggatata gagatggaaa caagatataa      240
gaaggattga gaatcatata atacaggagc ttaaacacct atgcgcgatg ataaagaggg      300
tactattaga gcgcttgga aataccagga agttgagaga gttaacagaa gggcgcacgc      360
tggattggcc acaaaatcga attactgaag taagtgcaaa acgacaaatt gtcacagaat      420
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ggagatacaa tctatgcata ataggaatac ctgaaactga ggacagagca agtggagctg      540
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aatggaaaag gctcatagga taccttttaa gtttaatgaa aagaaagcag catctagaca      660
tatccgggtg acgtttttga atttcaaaga cgaaacattt tacaagcatc cagtcagaga      720
aagcagggtta cttacaaagg ggcaaaagtc aggctgacct cagatttttc tcttgcaatt      780
ctaa atg cca gaa gac agt gga aca ata tct aga gtg tta agg gaa aat      829
Met Pro Glu Asp Ser Gly Thr Ile Ser Arg Val Leu Arg Glu Asn
      1          5          10

aat ttt gag cca aga att ata tac tct gcc aag tta tca ttt ctt tac      877
Asn Phe Glu Pro Arg Ile Ile Tyr Ser Ala Lys Leu Ser Phe Leu Tyr
      16          21          26          31

aaa gga aac tgg aag aca ttc tta gat ata cag ggg tta gga aag tat      925
Lys Gly Asn Trp Lys Thr Phe Leu Asp Ile Gln Gly Leu Gly Lys Tyr
      32          37          42          47

atc aac caa gaa ctt tcc ctg aaa att ttg ctg aag gat tta ctg cag      973
Ile Asn Gln Glu Leu Ser Leu Lys Ile Leu Leu Lys Asp Leu Leu Gln
      48          53          58          63

cta aca gag aac ctg aat taa aa taagaatagg gaggcaattg tatgaaagaa      1026
Leu Thr Glu Asn Leu Asn *
      64          69

ctgatgggtat gcattaaaac tagttaagga gcattaagtt taaattgtta tgtatagggc      1086
attaaaaacta aatacaaaaa tagaaacata agctgggtgt aaaatttcag tttacgttta      1146
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<211> 2809

<212> DNA

<213> Homo sapiens

<220>

<221> CDS

<222> (1936)..(2364)

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cctcggaaca ggcttaggga caagagacca gcagcctgaa ctggctgggg catccggaag	180
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	Met	His	Thr	Ser	Ile	Thr
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						acc
						agt
						ctc
						caa
						cga
						caa
						tta
						1971
						Leu
						Gln
						Arg
						Gln
						10

gac ttc ctc gtg gga gtc atc ctt caa aac tgg aga gtc ctg gac ctc	2019
Asp Phe Leu Val Gly Val Ile Leu Gln Asn Trp Arg Val Leu Asp Leu	
13 18 23 28	
cta acc act gag aaa ggg ggt acc tgc ata tac ctc cag gaa gaa tgc	2067
Leu Thr Thr Glu Lys Gly Gly Thr Cys Ile Tyr Leu Gln Glu Glu Cys	
29 34 39 44	
tgt ttc tgt gtt aat gaa tct ggc att gtt cat atc gca gtt cgt agg	2115
Cys Phe Cys Val Asn Glu Ser Gly Ile Val His Ile Ala Val Arg Arg	
45 50 55 60	
ctt cat gac agg gct gca gag ctt aga cat caa gtc gct gac tcc tgg	2163
Leu His Asp Arg Ala Ala Glu Leu Arg His Gln Val Ala Asp Ser Trp	
61 66 71 76	
tgg caa gga tca tcc ctt cta aga tgg ata ccc tgg gtt gcc ccc ttc	2211
Trp Gln Gly Ser Ser Leu Leu Arg Trp Ile Pro Trp Val Ala Pro Phe	
77 82 87 92	
cta gga ccc ctg atc ttc ctc ttc ctg tta cta atg att ggg cca tgc	2259
Leu Gly Pro Leu Ile Phe Leu Phe Leu Leu Leu Met Ile Gly Pro Cys	
93 98 103 108	
ata ttt aac ctt gta tcc cgc ttc att tcc caa agg ctg aat tgt ttt	2307
Ile Phe Asn Leu Val Ser Arg Phe Ile Ser Gln Arg Leu Asn Cys Phe	
109 114 119 124	
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Ile Gln Ala Ser Met Gln Lys His Ile Asp Asn Ile Phe His Leu Cys	
125 130 135 140	
cac gtc taa taccaga gcctacgagg aaaccattcg gaagctccag aacccaggcc	2411
His Val *	
141	
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 <222> (181)..(1194)

<400> 172

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tagacgttga attattgata ttctccctct ctctctctag gataactaca gagagctaca 180

atg gaa aag tcc tgg atg ctg tgg aac ttt gtt gaa aga tgg cta ata 228
Met Glu Lys Ser Trp Met Leu Trp Asn Phe Val Glu Arg Trp Leu Ile
  1           5           10          15

gcc ttg gct tca tgg tct tgg gct ctc tgc cgt att tct ctt tta cct 276
Ala Leu Ala Ser Trp Ser Trp Ala Leu Cys Arg Ile Ser Leu Leu Pro
 17           22           27           32

tta ata gtg act ttt cat ctg tat gga ggc att atc tta ctt ttg tta 324
Leu Ile Val Thr Phe His Leu Tyr Gly Gly Ile Ile Leu Leu Leu Leu
 33           38           43           48

ata ttc ata tca ata gca ggt att ctg tat aaa ttc cag gat gta ttg 372
Ile Phe Ile Ser Ile Ala Gly Ile Leu Tyr Lys Phe Gln Asp Val Leu
 49           54           59           64

ctt tat ttt cca gaa cag cca tcc tct tca cgt ctt tat gtt ccc atg 420
Leu Tyr Phe Pro Glu Gln Pro Ser Ser Ser Arg Leu Tyr Val Pro Met
 65           70           75           80

ccc act ggc att cca cat gaa aac att ttc atc aga acc aaa gat gga 468
Pro Thr Gly Ile Pro His Glu Asn Ile Phe Ile Arg Thr Lys Asp Gly
 81           86           91           96

ata cgt ctg aat ctt att ttg ata cga tac act gga gac aat tca ccc 516
Ile Arg Leu Asn Leu Ile Leu Ile Arg Tyr Thr Gly Asp Asn Ser Pro
 97           102          107          112

tat tcc cca act ata att tat ttt cat ggg aat gca ggc aac ata ggt 564
Tyr Ser Pro Thr Ile Ile Tyr Phe His Gly Asn Ala Gly Asn Ile Gly
113           118          123          128

cac agg ttg cca aat gca tta ctt atg ttg gtt aac ctc aaa gtt aac 612
His Arg Leu Pro Asn Ala Leu Leu Met Leu Val Asn Leu Lys Val Asn
129           134          139          144

ctt ttg ctg gtt gat tat cga gga tat gga aaa agt gaa gga gaa gca 660
Leu Leu Leu Val Asp Tyr Arg Gly Tyr Gly Lys Ser Glu Gly Glu Ala
145           150          155          160

agt gaa gaa gga ctc tac tta gat tct gaa gct gtg tta gac tac gtg 708
Ser Glu Glu Gly Leu Tyr Leu Asp Ser Glu Ala Val Leu Asp Tyr Val
161           166          171          176

atg act agc cct gac ctt gat aaa aca aaa att ttt ctt ttt ggc cgt 756

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Ser Leu Gly Gly Ala Val Ala Ile His Leu Ala Ser Glu Asn Ser His	
193 198 203 208	
agg att tca gcc att atg gtg gag aac aca ttt tta agc ata cca cat	852
Arg Ile Ser Ala Ile Met Val Glu Asn Thr Phe Leu Ser Ile Pro His	
209 214 219 224	
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225 230 235 240	
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Trp Cys Tyr Lys Asn Lys Phe Leu Ser Tyr Arg Lys Ile Ser Gln Cys	
241 246 251 256	
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Arg Met Pro Ser Leu Phe Ile Ser Gly Leu Ser Asp Gln Leu Ile Pro	
257 262 267 272	
cca gta atg atg aaa caa ctt tat gaa ctc tcc cca tct cgg act aag	1044
Pro Val Met Met Lys Gln Leu Tyr Glu Leu Ser Pro Ser Arg Thr Lys	
273 278 283 288	
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Arg Leu Ala Ile Phe Pro Asp Gly Thr His Asn Asp Thr Trp Gln Cys	
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Gln Gly Tyr Phe Thr Ala Leu Glu Gln Phe Ile Lys Glu Val Val Lys	
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agc cat tct cct gaa gaa atg gca aaa act tca tct aat gta aca att	1188
Ser His Ser Pro Glu Glu Met Ala Lys Thr Ser Ser Asn Val Thr Ile	
321 326 331 336	
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Ile *	
337	
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ttgaaaggac ttactgctc ctttacgata ttccaaatag ttttttacat tggaaaaact	1364
aattottggg attctttcat acattttcat caaaactttc agtgtgatta tgtattcata	1424
tottcagttt aatatgtcag tataatagat attgttcaaa agtttcttgt tgctaaagtg	1484
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Gly Thr Gly Gln Ser Met Phe Ser Pro Ala Ser Ile Gly Gln Pro Arg	
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Lys Thr Thr Leu Ser Pro Ala Gln Leu Asp Pro Phe Tyr Thr Gln Gly	
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Asp Ser Leu Thr Ser Glu Asp His Leu Asp Asp Ser Trp Val Thr Val	
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Phe Gly Phe Pro Gln Ala Ser Ala Ser Tyr Ile Leu Leu Gln Phe Ala	
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Trp Met His Ile Arg Tyr Gln Ser Lys Leu Gln Ala Arg Lys Ala Leu	
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Pro Thr Gln Pro Gly Ser Thr Pro Arg Ile Ser Thr Met Arg Pro Leu	
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Arg Gln Thr Pro Lys Lys Asp Glu Ser Leu Val Ser Lys Ala Met Glu	
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Tyr Met Phe Gly Trp *	
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Arg Gly Gly Gly Gly Gly Arg Gly Gly Leu His Asp Phe Arg Ser Pro	
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Pro Pro Gly Met Gly Leu Asn Gln Asn Arg Gly Pro Met Gly Pro Gly	
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Pro Gly Gln Ser Gly Pro Lys Pro Pro Ile Pro Pro Pro Pro Pro His	
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Pro Gly Pro Ala Pro Gly Val Gly Ser Ala Pro Pro Ala Ser Ser Ser	
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Lys Met Pro Gly Gly Pro Lys Pro Gly Gly Gly Pro Gly Leu Ser Thr	
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Pro Gly Gly His Pro Lys Pro Pro His Arg Gly Gly Gly Glu Pro Arg	
227 232 237 242	
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Gly Gly Arg Gln His His Pro Pro Tyr His Gln Gln His His Gln Gly	
243 248 253 258	
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Lys Thr Tyr Thr Gln Arg Cys Arg Leu Phe Val Gly Asn Leu Pro Ala	
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gat atc acg gag gat gaa ttc aaa aga cta ttt gct aaa tat gga gaa	1736
Asp Ile Thr Glu Asp Glu Phe Lys Arg Leu Phe Ala Lys Tyr Gly Glu	
307 312 317 322	
cca gga gaa gtt ttt atc aac aaa ggc aaa gga ttc gga ttt att aag	1784
Pro Gly Glu Val Phe Ile Asn Lys Gly Lys Gly Phe Gly Phe Ile Lys	
323 328 333 338	
ctt gaa tct aga gct ttg gct gaa att gcc aaa gcc gaa ctg gat gat	1832
Leu Glu Ser Arg Ala Leu Ala Glu Ile Ala Lys Ala Glu Leu Asp Asp	
339 344 349 354	
aca ccc atg aga ggt aga cag ctt cga gtt cgc ttt gcc aca cat gct	1880
Thr Pro Met Arg Gly Arg Gln Leu Arg Val Arg Phe Ala Thr His Ala	
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gct gcc ctt tct gtt cgt aat ctt tca cct tat gtt tcc aat gaa ctg	1928
Ala Ala Leu Ser Val Arg Asn Leu Ser Pro Tyr Val Ser Asn Glu Leu	
371 376 381 386	
ttg gaa gaa gcc ttt agc caa ttt ggt cct att gaa agg gct gtt gta	1976
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387 392 397 402	
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Ile Val Asp Asp Arg Gly Arg Ser Thr Gly Lys Gly Ile Val Glu Phe	
403 408 413 418	
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Ala Ser Lys Pro Ala Ala Arg Lys Ala Phe Glu Arg Cys Ser Glu Gly	
419 424 429 434	

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gaa caa cta gat gat gaa gat ggt ctt cct gaa aaa ctt gcc cag aag	2168
Glu Gln Leu Asp Asp Glu Asp Gly Leu Pro Glu Lys Leu Ala Gln Lys	
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His Gly Thr Phe Glu Tyr Glu Tyr Ser Gln Arg Trp Lys Ser Leu Asp	
483 488 493 498	
gaa atg gaa aaa cag caa agg gaa caa gtt gaa aaa aac atg aaa gat	2312
Glu Met Glu Lys Gln Gln Arg Glu Gln Val Glu Lys Asn Met Lys Asp	
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gca aaa gac aaa ttg gaa agt gaa atg gaa gat gcc tat cat gaa cat	2360
Ala Lys Asp Lys Leu Glu Ser Glu Met Glu Asp Ala Tyr His Glu His	
515 520 525 530	
cag gca aat ctt ttg cgc caa gat ctg atg aga cga cag gaa gaa tta	2408
Gln Ala Asn Leu Leu Arg Gln Asp Leu Met Arg Arg Gln Glu Glu Leu	
531 536 541 546	
aga cgc atg gaa gaa ctt cac aat caa gaa atg cag aaa cgt aaa gaa	2456
Arg Arg Met Glu Glu Leu His Asn Gln Glu Met Gln Lys Arg Lys Glu	
547 552 557 562	
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Met Gln Leu Arg Gln Glu Glu Glu Arg Arg Arg Glu Glu Glu Met	
563 568 573 578	
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Met Ile Arg Gln Arg Glu Met Glu Glu Gln Met Arg Arg Gln Arg Glu	
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Glu Ser Tyr Ser Arg Met Gly Tyr Met Asp Pro Arg Glu Arg Asp Met	
595 600 605 610	
cga atg ggt ggc gga gga gca atg aac atg gga gat ccc tat ggt tca	2648
Arg Met Gly Gly Gly Gly Ala Met Asn Met Gly Asp Pro Tyr Gly Ser	
611 616 621 626	
gga ggc cag aaa ttt cca cct cta gga ggt ggt ggt ggc ata ggt tat	2696
Gly Gly Gln Lys Phe Pro Pro Leu Gly Gly Gly Gly Ile Gly Tyr	
627 632 637 642	
gaa gct aat cct ggc gtt cca cca gca acc atg agt ggt tcc atg atg	2744
Glu Ala Asn Pro Gly Val Pro Pro Ala Thr Met Ser Gly Ser Met Met	
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                                         Met Arg Arg Glu
                                         1

agc aac aga tta tct gca cct tct tat ctt gcc aga agt cta gca gat      163
Ser Asn Arg Leu Ser Ala Pro Ser Tyr Leu Ala Arg Ser Leu Ala Asp
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gtc cct aga gag tat ggt tct tct cag tca ttt gta acg gaa gtt agt      211
Val Pro Arg Glu Tyr Gly Ser Ser Gln Ser Phe Val Thr Glu Val Ser
   21                      26                      31                      36

ttt gct gtt gaa aat gga gac tct ggt tcc cga tat tat tat tca gac      259
Phe Ala Val Glu Asn Gly Asp Ser Gly Ser Arg Tyr Tyr Tyr Ser Asp
   37                      42                      47                      52

aat ttt ttt gat ggt cag aga aag cgg cca ctt gga gat cgt gca cat      307
Asn Phe Phe Asp Gly Gln Arg Lys Arg Pro Leu Gly Asp Arg Ala His
   53                      58                      63                      68

gaa gac tac aga tat tat gaa tac aac cat gat ctc ttc caa aga atg      355
Glu Asp Tyr Arg Tyr Tyr Glu Tyr Asn His Asp Leu Phe Gln Arg Met
   69                      74                      79                      84

cca cag aat cag ggg agg cat gct tca ggt att ggg aga gtt gct gct      403
Pro Gln Asn Gln Gly Arg His Ala Ser Gly Ile Gly Arg Val Ala Ala
   85                      90                      95                      100

aca tct tta gga aat ttg act aac cat ggt tct gaa gat tta ccc ctt      451
Thr Ser Leu Gly Asn Leu Thr Asn His Gly Ser Glu Asp Leu Pro Leu
  101                      106                      111                      116

cct cct ggc tgg tct gtg gac tgg aca atg aga ggg aga aaa tat tat      499
Pro Pro Gly Trp Ser Val Asp Trp Thr Met Arg Gly Arg Lys Tyr Tyr
  117                      122                      127                      132

ata gat cat aac aca aat aca act cac tgg agc cat cct ctt gag cga      547
Ile Asp His Asn Thr Asn Thr Thr His Trp Ser His Pro Leu Glu Arg
  133                      138                      143                      148

gaa gga ctt cct cct gga tgg gaa cga gtt gag tca tcc gaa ttt gga      595
Glu Gly Leu Pro Pro Gly Trp Glu Arg Val Glu Ser Ser Glu Phe Gly
  149                      154                      159                      164

acc tat tat gta gat cac aca aat aag aag gcc caa tac agg cat ccc      643
Thr Tyr Tyr Val Asp His Thr Asn Lys Lys Ala Gln Tyr Arg His Pro
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Cys Ala Pro Ser Val	Pro Arg Tyr Asp Gln Pro Pro Pro Val Thr Tyr			
181	186	191	196	
cag cca cag caa act	gaa aga aat cag tcc ctt ctg gta cct gca aat			739
Gln Pro Gln Gln Thr	Glu Arg Asn Gln Ser Leu Leu Val Pro Ala Asn			
197	202	207	212	
cca tat cat act gca	gaa att cct gac tgg ctt cag gtt tac gca cga			787
Pro Tyr His Thr Ala	Glu Ile Pro Asp Trp Leu Gln Val Tyr Ala Arg			
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gcc cct gtg aaa tat	gac cac att ctg aag tgg gaa ctc ttc cag ctg			835
Ala Pro Val Lys Tyr	Asp His Ile Leu Lys Trp Glu Leu Phe Gln Leu			
229	234	239	244	
gct gac ctg gat aca	tac cag gga atg cta aag ttg ctc ttc atg aaa			883
Ala Asp Leu Asp Thr	Tyr Gln Gly Met Leu Lys Leu Leu Phe Met Lys			
245	250	255	260	
gaa ttg gag cag att	gtt aaa atg tat gaa gca tac aga caa gcc ctt			931
Glu Leu Glu Gln Ile	Val Lys Met Tyr Glu Ala Tyr Arg Gln Ala Leu			
261	266	271	276	
ctt aca gag ttg gaa	aac cga aag cag aga cag cag tgg tat gcc caa			979
Leu Thr Glu Leu Glu	Asn Arg Lys Gln Arg Gln Gln Trp Tyr Ala Gln			
277	282	287	292	
caa cat gga aaa aat	ttt tga gc tgatttttta aaaatttaag ttttgtaaga			1032
Gln His Gly Lys Asn	Phe *			
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cccagctact tgggaggctg	aggctcagagg atggcttgag cccaagaggc agagggttgca			1752

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tgt cct gga ggc ggc aaa gca caa ctt tcc tcc gct tct ctc ctc gga 96  
Cys Pro Gly Gly Gly Lys Ala Gln Leu Ser Ser Ala Ser Leu Leu Gly  
17 22 27 32

gcc ggg ctc ctg ctg cag ccc ccg acg cca cct ccg ctg ctg ctg ctg 144  
Ala Gly Leu Leu Leu Gln Pro Pro Thr Pro Pro Pro Leu Leu Leu Leu  
33 38 43 48

ctc ttc ccg ctg ctg ctc ttc tcc agg ctc tgt ggt gcc tta gct gga 192  
Leu Phe Pro Leu Leu Leu Phe Ser Arg Leu Cys Gly Ala Leu Ala Gly  
49 54 59 64

cca att att gtg gag cca cat gtc aca gca gta tgg gga aag aat gtt 240  
Pro Ile Ile Val Glu Pro His Val Thr Ala Val Trp Gly Lys Asn Val  
65 70 75 80

tca tta aag tgt tta att gaa gta aat gaa acc ata aca cag att tca 288  
Ser Leu Lys Cys Leu Ile Glu Val Asn Glu Thr Ile Thr Gln Ile Ser  
81 86 91 96

tgg gag aag ata cat ggc aaa agt tca cag act gtt gca gtt cac cat 336  
Trp Glu Lys Ile His Gly Lys Ser Ser Gln Thr Val Ala Val His His  
97 102 107 112

ccc caa tat gga ttc tct gtt caa gga gaa tat cag gga aga gtc ttg 384  
Pro Gln Tyr Gly Phe Ser Val Gln Gly Glu Tyr Gln Gly Arg Val Leu  
113 118 123 128

ttt aaa aat tac tca ctt aat gat gca aca att act ctg cat aac ata 432  
Phe Lys Asn Tyr Ser Leu Asn Asp Ala Thr Ile Thr Leu His Asn Ile  
129 134 139 144

gga ttc tct gat tct gga aaa tac atc tgc aaa gct gtt aca ttc ccg 480  
Gly Phe Ser Asp Ser Gly Lys Tyr Ile Cys Lys Ala Val Thr Phe Pro  
145 150 155 160



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Leu Gly Asn Ala Gln Ser Ser Thr Thr Val Thr Val Leu Val Glu Pro	
161 166 171 176	
act gtg agc ctg ata aaa ggg cca gat tct tta att gat gga gga aat	576
Thr Val Ser Leu Ile Lys Gly Pro Asp Ser Leu Ile Asp Gly Gly Asn	
177 182 187 192	
gaa aca gta gca gcc att tgc atc gca gcc act gga aaa ccc gtt gca	624
Glu Thr Val Ala Ala Ile Cys Ile Ala Ala Thr Gly Lys Pro Val Ala	
193 198 203 208	
cat att gac tgg gaa ggt gat ctt ggt gaa atg gaa tcc act aca act	672
His Ile Asp Trp Glu Gly Asp Leu Gly Glu Met Glu Ser Thr Thr Thr	
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Pro Ala Leu Glu Lys Asp Ile Arg Tyr Ser Phe Ile Leu Asp Ile Gln	
257 262 267 272	
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Tyr Ala Pro Glu Val Ser Val Thr Gly Tyr Asp Gly Asn Trp Phe Val	
273 278 283 288	
gga aga aaa ggt gtt aat ctc aaa tgt aat gct gat gca aat cca cca	912
Gly Arg Lys Gly Val Asn Leu Lys Cys Asn Ala Asp Ala Asn Pro Pro	
289 294 299 304	
ccc ttc aaa tct gtg tgg agc agg ttg gat gga caa tgg cct gat ggt	960
Pro Phe Lys Ser Val Trp Ser Arg Leu Asp Gly Gln Trp Pro Asp Gly	
305 310 315 320	
tta ttg gct tca gac aat act ctt cat ttt gtc cat cca ttg act ttc	1008
Leu Leu Ala Ser Asp Asn Thr Leu His Phe Val His Pro Leu Thr Phe	
321 326 331 336	
aat tat tct ggt gtt tat atc tgt aaa gtg acc aat tcc ctt ggt caa	1056
Asn Tyr Ser Gly Val Tyr Ile Cys Lys Val Thr Asn Ser Leu Gly Gln	
337 342 347 352	
aga agt gac caa aaa gtc atc tac att tca gat cct cct act act acc	1104
Arg Ser Asp Gln Lys Val Ile Tyr Ile Ser Asp Pro Pro Thr Thr Thr	
353 358 363 368	
acc ctt cag cct aca att cag tgg cat ccc tca act gct gac atc gag	1152
Thr Leu Gln Pro Thr Ile Gln Trp His Pro Ser Thr Ala Asp Ile Glu	
369 374 379 384	

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Asp Leu Ala Thr Glu Pro Lys Lys Leu Pro Phe Pro Leu Ser Thr Leu	
385 390 395 400	
gca aca att aag gat gac aca att gcc acg atc att gct agt gta gtg	1248
Ala Thr Ile Lys Asp Asp Thr Ile Ala Thr Ile Ile Ala Ser Val Val	
401 406 411 416	
ggg gct ctc ttc ata gta ctt gta agt gtt ttg gct gga ata ttc	1296
Gly Gly Ala Leu Phe Ile Val Leu Val Ser Val Leu Ala Gly Ile Phe	
417 422 427 432	
tgc tat agg aga aga cgg acg ttt cgt gga gac tag ttt gcc aag aac	1344
Cys Tyr Arg Arg Arg Arg Thr Phe Arg Gly Asp Tyr Phe Ala Lys Asn	
433 438 443 448	
tac att cca cca tca gat atg caa aaa gaa tca caa ata gat gtt ctt	1392
Tyr Ile Pro Pro Ser Asp Met Gln Lys Glu Ser Gln Ile Asp Val Leu	
449 454 459 464	
caa caa gat gag ctt gat tct tac cca gac agt gta aaa aaa gaa aaa	1440
Gln Gln Asp Glu Leu Asp Ser Tyr Pro Asp Ser Val Lys Lys Glu Lys	
465 470 475 480	
aaa aat cca gtg aac aat cta ata cgt aaa gac tat tta gaa gag cct	1488
Lys Asn Pro Val Asn Asn Leu Ile Arg Lys Asp Tyr Leu Glu Glu Pro	
481 486 491 496	
gaa aaa act cag tgg aac aat gta gaa aat ctc aat agg ttt gaa aga	1536
Glu Lys Thr Gln Trp Asn Asn Val Glu Asn Leu Asn Arg Phe Glu Arg	
497 502 507 512	
cca atg gat tat tat gaa gat cta aaa atg gga atg aag ttt gtc agt	1584
Pro Met Asp Tyr Tyr Glu Asp Leu Lys Met Gly Met Lys Phe Val Ser	
513 518 523 528	
gat gaa cat tat gat gaa aac gaa gat gac tta gtt tca cat gta gat	1632
Asp Glu His Tyr Asp Glu Asn Glu Asp Asp Leu Val Ser His Val Asp	
529 534 539 544	
ggg tcc gta att tcc agg agg gag tgg tat gtt tag caac cactgaatgt	1682
Gly Ser Val Ile Ser Arg Arg Glu Trp Tyr Val *	
545 550 555	
gacttaacta tgtacaatgt tcattcacac tagttgatca ttttcagatt gttcatactt	1742
tttcttgagg aagaataagc tttttcaagt tgattttcaa gcttactttt tatattctaa	1802
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aagtatgatg tttgtttaac atatacctct caaaatttat caccactcaa tgacactgca	2102

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tcaaagatat tttgttgac taaaactgtg gtagtaaact cagtgaacat gatgtgtgga 2342  
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tgtaaattag tgcgatgagt aggggaaggg agcctactag ggtgtagaat aggaagtatg 180  
tgctgcgtt caggcgttct ggctggttgc ctcacgggt gatgatagcc aagggtgggga 240  
taagtgtggt tgcgaagtgg gctcgtgggt tggcagt atg aga gtt gta atg gcc 295  
Met Arg Val Val Met Ala  
1

cga ctg ttg agt gag ggg gag cag ggg atc cca acg gct tgc gct gcc 343  
Arg Leu Leu Ser Glu Gly Glu Gln Gly Ile Pro Thr Ala Cys Ala Ala  
7 12 17 22

ttt gcg cag cag ccg gcg ggc gag cca cgt cgc ggc ctg gct ggg gta 391  
Phe Ala Gln Gln Pro Ala Gly Glu Pro Arg Arg Gly Leu Ala Gly Val  
23 28 33 38

gga gag ggc ggt ccc cag tgc agt tgg gtg aac tac cgt tgc aca ctg 439  
Gly Glu Gly Gly Pro Gln Cys Ser Trp Val Asn Tyr Arg Cys Thr Leu  
39 44 49 54

gag ttt ctg gtg tct ttg ctt gga act gac cta gct cgt ggc agg ggg 487  
Glu Phe Leu Val Ser Leu Leu Gly Thr Asp Leu Ala Arg Gly Arg Gly  
55 60 65 70

aac tcg gct agc ggc ccc aca gcc cct gct gac tca aaa caa cta atg 535  
Asn Ser Ala Ser Gly Pro Thr Ala Pro Ala Asp Ser Lys Gln Leu Met  
71 76 81 86

aac tot gga agc cca gcc agg gac aat gca cct tca cag aga ttc tgc	583
Asn Ser Gly Ser Pro Ala Arg Asp Asn Ala Pro Ser Gln Arg Phe Cys	
87 92 97 102	
act aat ctg agt gaa ggt cta agg ttt gga atc tcc ccc tca tgg aga	631
Thr Asn Leu Ser Glu Gly Leu Arg Phe Gly Ile Ser Pro Ser Trp Arg	
103 108 113 118	
gaa gct ttg tat ggc tgt cat gct tag acagt gattcctgca acttgacctt	683
Glu Ala Leu Tyr Gly Cys His Ala *	
119 124	
caggctggga gaggtggaga gccatgcctg ttctccttcc ttgctatgga atttgctgac	743
acaatatctt ccgcctggtg ctgggcatat cctaagaact tacaactttc ctgtattatc	803
ctgtgtgagc agctgtcacc ttattggggg aaaaatgcct gaaaattagg gggcacttca	863
agtagatagc ttctatcttc tatattattc ttactttaa aatgctttat tggaattatt	923
ttgataaaag caaataacttg tatataagac aaatatagga aatagaagct atctacttga	983
agtgccccct aattttcagg catttttccc ccaataaggc gacagctgct cacacaggat	1043
aatacaggaa agttgtaagt tottaggata tgcccagcac caggcggaag atattgtgtc	1103
agcaaattcc atagcaagga aggagaacag gcatggctct ccacctctcc cagcctgaag	1163
gtcaagttgc aggaatcact gtctaagcat gacagccata caaagcttct ctccatgagg	1223
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gccacgagct aggtcagttc caagcaaaga caccagaaac tccagtgtgc aacggtagtt	1463
cacccaactg cactgggggac cgccctctcc taccacagcc aggccgagac gtggccgccc	1523
gccggtgct gcgcaaaggc agcgcaagcc gttgggatcc cctgctcccc ctactcaac	1583
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gacgtggggg cggccacggc aggattaacc tccatttcag ctaatc atg gga gag	175
Met Gly Glu	
1	
att aaa gtc tct cct gat tat aac tgg ttt aga ggt aca gtt ccc ctt	223
Ile Lys Val Ser Pro Asp Tyr Asn Trp Phe Arg Gly Thr Val Pro Leu	
4 9 14 19	
aaa aag att att gtg gat gat gat gac agt aag ata tgg tcg ctc tat	271
Lys Lys Ile Ile Val Asp Asp Asp Asp Ser Lys Ile Trp Ser Leu Tyr	
20 25 30 35	
gac gcg ggc ccc cga agt atc agg tgt cct ctc ata ttc ctg ccc cct	319
Asp Ala Gly Pro Arg Ser Ile Arg Cys Pro Leu Ile Phe Leu Pro Pro	
36 41 46 51	
gtc agt gga act gca gat gtc ttt ttc cgg cag att ttg gct ctg act	367
Val Ser Gly Thr Ala Asp Val Phe Phe Arg Gln Ile Leu Ala Leu Thr	
52 57 62 67	
gga tgg ggt tac cgg gtt atc gct ttg cag tat cca gtt tat tgg gac	415
Gly Trp Gly Tyr Arg Val Ile Ala Leu Gln Tyr Pro Val Tyr Trp Asp	
68 73 78 83	
cat ctc gag ttc tgt gat gga ttc aga aaa ctt tta gac cat tta caa	463
His Leu Glu Phe Cys Asp Gly Phe Arg Lys Leu Leu Asp His Leu Gln	
84 89 94 99	
ttg gat aaa gtt cat ctt ttt ggc gct tct ttg gga ggc ttt ttg gcc	511
Leu Asp Lys Val His Leu Phe Gly Ala Ser Leu Gly Gly Phe Leu Ala	
100 105 110 115	
cag aaa ttt gct gaa tac act cac aaa tct cct aga gtc cat tcc cta	559
Gln Lys Phe Ala Glu Tyr Thr His Lys Ser Pro Arg Val His Ser Leu	
116 121 126 131	
atc ctc tgc aat tcc ttc agt gac acc tct atc ttc aac caa act tgg	607
Ile Leu Cys Asn Ser Phe Ser Asp Thr Ser Ile Phe Asn Gln Thr Trp	
132 137 142 147	
act gca aac agc ttt tgg ctg atg cct gca ttt atg ctc aaa aaa ata	655
Thr Ala Asn Ser Phe Trp Leu Met Pro Ala Phe Met Leu Lys Lys Ile	
148 153 158 163	
gtt ctt gga aat ttt tca tct ggc ccg gtg gac cct atg atg gct gat	703
Val Leu Gly Asn Phe Ser Ser Gly Pro Val Asp Pro Met Met Ala Asp	
164 169 174 179	
gcc att gat ttc atg gta gac agg cta gaa agt ttg ggt cag agt gaa	751
Ala Ile Asp Phe Met Val Asp Arg Leu Glu Ser Leu Gly Gln Ser Glu	

180	185	190	195	
ctg gct tca aga ctt acc ttg aat tgt caa aat tct tat gtg gaa cct				799
Leu Ala Ser Arg Leu Thr Leu Asn Cys Gln Asn Ser Tyr Val Glu Pro				
196	201	206	211	
cat aaa att cgg gac ata cct gta act att atg gat gtg ttt gat cag				847
His Lys Ile Arg Asp Ile Pro Val Thr Ile Met Asp Val Phe Asp Gln				
212	217	222	227	
agt gcg ctt tca act gaa gct aaa gaa gaa atg tac aag ctg tat cct				895
Ser Ala Leu Ser Thr Glu Ala Lys Glu Glu Met Tyr Lys Leu Tyr Pro				
228	233	238	243	
aat gcc cga aga gct cat ctg aaa aca gga ggc aat ttc cca tac ctg				943
Asn Ala Arg Arg Ala His Leu Lys Thr Gly Gly Asn Phe Pro Tyr Leu				
244	249	254	259	
tgc aga agt gca gag gtc aat ctt tat gta cag ata cat ttg ctg caa				991
Cys Arg Ser Ala Glu Val Asn Leu Tyr Val Gln Ile His Leu Leu Gln				
260	265	270	275	
ttc cat gga acc aaa tac gcg gcc att gac cca tca atg gtc agt gcc				1039
Phe His Gly Thr Lys Tyr Ala Ala Ile Asp Pro Ser Met Val Ser Ala				
276	281	286	291	
gag gag ctt gag gtg cag aaa ggc agc ctt ggc atc agc cag gag gag				1087
Glu Glu Leu Glu Val Gln Lys Gly Ser Leu Gly Ile Ser Gln Glu Glu				
292	297	302	307	
cag tag tgtgtctctc gctgtcaatg atgagttgac ccggtgtgtt cttgtatagt				1143
Gln *				
308				
cagtggcattc agcaccgctc agccggcctt ttcttcagg ttcgtcaggc tcaccggttc				1203
tcactgtgtc tgggaagtag gactgatggt catcttcattg acagggcgga tctccactaa				1263
gcctgtgttaa ctgttccttc tttgggtttc ttagcttttg aatttgaaga agtacttttg				1323
aagactccca ttttaagaac cgtgcaaatt ttgctaccaa aagtcttcac cactgtgttc				1383
ttaagtgaat gttaatttct gaggtttggg actttgtggt gggttttttc ttcttttctt				1443
ttccattctt ctttctttct ttttatgttg tttgctgtaa atgctgcaca tccagattgc				1503
atatcaggac attggttatt ttatgctttc ttggatataa ccatgatcag agtgccatgg				1563
ccactacccc actgtttgct ctctgcaaaa tcaactgctt ttaatttaca cttaaacaaa				1623
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ttcaaaaaaa aaaaaaaaaa				1702

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 <212> DNA  
 <213> Homo sapiens

<220>  
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 <222> (234)..(2492)

<400> 179

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cccaatccct gcttattatt tccctaacag aagaccatcc cccttgccac tccctgggttt      120
ttcttctctg gcagcaatga agcagctgct gaccagctc tagttttcgg gaagtcagat      180
gaccttttcc ctcccgcggc tctctacctc tcgcccgcctc tagggaggac acc   atg      236
                                   Met
                                   1

ggc cca ctg atg gtt ctt ttt tgc ctg ctg ttc ctg tac cca ggt ctg      284
Gly Pro Leu Met Val Leu Phe Cys Leu Leu Phe Leu Tyr Pro Gly Leu
  2                               7                               12                               17

gca gac tcg gct ccc tcc tgc cct cag aac gtg aat atc tcg ggt ggc      332
Ala Asp Ser Ala Pro Ser Cys Pro Gln Asn Val Asn Ile Ser Gly Gly
  18                               23                               28                               33

acc ttc acc ctc agc cat ggc tgg gct cct ggg agc ctt ctc acc tac      380
Thr Phe Thr Leu Ser His Gly Trp Ala Pro Gly Ser Leu Leu Thr Tyr
  34                               39                               44                               49

tcc tgc ccc cag ggc ctg tac cca tcc cca gca tca cgg ctg tgc aag      428
Ser Cys Pro Gln Gly Leu Tyr Pro Ser Pro Ala Ser Arg Leu Cys Lys
  50                               55                               60                               65

agc agc gga cag tgg cag acc cca gga gcc acc cgg tct ctg tct aag      476
Ser Ser Gly Gln Trp Gln Thr Pro Gly Ala Thr Arg Ser Leu Ser Lys
  66                               71                               76                               81

gcg gtc tgc aaa cct gtg cgc tgt cca gcc cct gtc tcc ttt gag aat      524
Ala Val Cys Lys Pro Val Arg Cys Pro Ala Pro Val Ser Phe Glu Asn
  82                               87                               92                               97

ggc att tat acc cca cgg ctg ggg tcc tat ccc gtg ggt ggc aat gtg      572
Gly Ile Tyr Thr Pro Arg Leu Gly Ser Tyr Pro Val Gly Gly Asn Val
  98                               103                               108                               113

agc ttc gag tgt gag gat ggc ttc ata ttg cgg ggc tcg cct gtg cgt      620
Ser Phe Glu Cys Glu Asp Gly Phe Ile Leu Arg Gly Ser Pro Val Arg
  114                               119                               124                               129

cag tgt cgc ccc aac ggc atg tgg gat gga gaa aca gct gtg tgt gat      668
Gln Cys Arg Pro Asn Gly Met Trp Asp Gly Glu Thr Ala Val Cys Asp
  130                               135                               140                               145

aat ggg gct ggc cac tgc ccc aac cca ggc att tca ctg ggc gca gtg      716

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Asn Gly Ala Gly His Cys Pro Asn Pro Gly Ile Ser Leu Gly Ala Val	
146 151 156 161	
cgg aca ggc ttc cgc ttt ggt cat ggg gac aag gtc cgc tat cgc tgc	764
Arg Thr Gly Phe Arg Phe Gly His Gly Asp Lys Val Arg Tyr Arg Cys	
162 167 172 177	
tcc tcg aat ctt gtg ctc acg ggg tct tcg gag cgg gag tgc cag ggc	812
Ser Ser Asn Leu Val Leu Thr Gly Ser Ser Glu Arg Glu Cys Gln Gly	
178 183 188 193	
aac ggg gtc tgg agt gga acg gag ccc atc tgc cgc caa ccc tac tct	860
Asn Gly Val Trp Ser Gly Thr Glu Pro Ile Cys Arg Gln Pro Tyr Ser	
194 199 204 209	
tat gac ttc cct gag gac gtg gcc cct gcc ctg ggc act tcc ttc tcc	908
Tyr Asp Phe Pro Glu Asp Val Ala Pro Ala Leu Gly Thr Ser Phe Ser	
210 215 220 225	
cac atg ctt ggg gcc acc aat ccc acc cag aag aca aag gaa agc ctg	956
His Met Leu Gly Ala Thr Asn Pro Thr Gln Lys Thr Lys Glu Ser Leu	
226 231 236 241	
ggc cgt aaa atc caa atc cag cgc tct ggt cat ctg aac ctc tac ctg	1004
Gly Arg Lys Ile Gln Ile Gln Arg Ser Gly His Leu Asn Leu Tyr Leu	
242 247 252 257	
ctc ctg gac tgt tcg cag agt gtg tcg gaa aat gac ttt ctc atc ttc	1052
Leu Leu Asp Cys Ser Gln Ser Val Ser Glu Asn Asp Phe Leu Ile Phe	
258 263 268 273	
aag gag agc gcc tcc ctc atg gtg gac agg atc ttc agc ttt gag atc	1100
Lys Glu Ser Ala Ser Leu Met Val Asp Arg Ile Phe Ser Phe Glu Ile	
274 279 284 289	
aat gtg agc gtt gcc att atc acc ttt gcc tca gag ccc aaa gtc ctc	1148
Asn Val Ser Val Ala Ile Ile Thr Phe Ala Ser Glu Pro Lys Val Leu	
290 295 300 305	
atg tct gtc ctg aac gac aac tcc cgg gat atg act gag gtg atc agc	1196
Met Ser Val Leu Asn Asp Asn Ser Arg Asp Met Thr Glu Val Ile Ser	
306 311 316 321	
agc ctg gaa aat gcc aac tat aaa gat cat gaa aat gga act ggg act	1244
Ser Leu Glu Asn Ala Asn Tyr Lys Asp His Glu Asn Gly Thr Gly Thr	
322 327 332 337	
aac acc tat gcg gcc tta aac agt gtc tat ctc atg atg aac aac caa	1292
Asn Thr Tyr Ala Ala Leu Asn Ser Val Tyr Leu Met Met Asn Asn Gln	
338 343 348 353	
atg cga ctc ctc ggc atg gaa acg atg gcc tgg cag gaa atc cga cat	1340
Met Arg Leu Leu Gly Met Glu Thr Met Ala Trp Gln Glu Ile Arg His	
354 359 364 369	
gcc atc atc ctt ctg aca gat gga aag tcc aat atg ggt ggc tct ccc	1388
Ala Ile Ile Leu Leu Thr Asp Gly Lys Ser Asn Met Gly Gly Ser Pro	



370	375	380	385	
aag aca gct gtt gac cat atc aga gag atc ctg aac atc aac cag aag				1436
Lys Thr Ala Val Asp His Ile Arg Glu Ile Leu Asn Ile Asn Gln Lys				
386	391	396	401	
agg aat gac tat ctg gac atc tat gcc atc ggg gtg ggc aag ctg gat				1484
Arg Asn Asp Tyr Leu Asp Ile Tyr Ala Ile Gly Val Gly Lys Leu Asp				
402	407	412	417	
gtg gac tgg aga gaa ctg aat gag cta ggg tcc aag aag gat ggt gag				1532
Val Asp Trp Arg Glu Leu Asn Glu Leu Gly Ser Lys Lys Asp Gly Glu				
418	423	428	433	
agg cat gcc ttc att ctg cag gac aca aag gct ctg cac cag gtc ttt				1580
Arg His Ala Phe Ile Leu Gln Asp Thr Lys Ala Leu His Gln Val Phe				
434	439	444	449	
gaa cat atg ctg gat gtc tcc aag ctc aca gac acc atc tgc ggg gtg				1628
Glu His Met Leu Asp Val Ser Lys Leu Thr Asp Thr Ile Cys Gly Val				
450	455	460	465	
ggg aac atg tca gca aac gcc tct gac cag gag agg aca ccc tgg cat				1676
Gly Asn Met Ser Ala Asn Ala Ser Asp Gln Glu Arg Thr Pro Trp His				
466	471	476	481	
gtc act att aag ccc aag agc caa gag acc tgc cgg ggg gcc ctc atc				1724
Val Thr Ile Lys Pro Lys Ser Gln Glu Thr Cys Arg Gly Ala Leu Ile				
482	487	492	497	
tcc gac caa tgg gtc ctg aca gca gct cat tgc ttc cgc gat ggc aac				1772
Ser Asp Gln Trp Val Leu Thr Ala Ala His Cys Phe Arg Asp Gly Asn				
498	503	508	513	
gac cac tcc ctg tgg agg gtc aat gtg gga gac ccc aaa tcc cag tgg				1820
Asp His Ser Leu Trp Arg Val Asn Val Gly Asp Pro Lys Ser Gln Trp				
514	519	524	529	
ggc aaa gaa ttc ctt att gag aag gcg gtg atc tcc cca ggg ttt gat				1868
Gly Lys Glu Phe Leu Ile Glu Lys Ala Val Ile Ser Pro Gly Phe Asp				
530	535	540	545	
gtc ttt gcc aaa aag aac cag gga atc ctg gag ttc tat ggt gat gac				1916
Val Phe Ala Lys Lys Asn Gln Gly Ile Leu Glu Phe Tyr Gly Asp Asp				
546	551	556	561	
ata gct ctg ctg aag ctg gcc cag aaa gta aag atg tcc acc cat gcc				1964
Ile Ala Leu Leu Lys Leu Ala Gln Lys Val Lys Met Ser Thr His Ala				
562	567	572	577	
agg ccc atc tgc ctt ccc tgc acg atg gag gcc aat ctg gct ctg cgg				2012
Arg Pro Ile Cys Leu Pro Cys Thr Met Glu Ala Asn Leu Ala Leu Arg				
578	583	588	593	
aga cct caa ggc agc acc tgt agg gac cat gag aat gaa ctg ctg aac				2060
Arg Pro Gln Gly Ser Thr Cys Arg Asp His Glu Asn Glu Leu Leu Asn				
594	599	604	609	

aaa cag agt gtt cct gct cat ttt gtc gcc ttg aat ggg agc aaa ctg	2108
Lys Gln Ser Val Pro Ala His Phe Val Ala Leu Asn Gly Ser Lys Leu	
610 615 620 625	
aac att aac ctt aag atg gga gtg gag tgg aca agc tgt gcc gag gtt	2156
Asn Ile Asn Leu Lys Met Gly Val Glu Trp Thr Ser Cys Ala Glu Val	
626 631 636 641	
gtc tcc caa gaa aaa acc atg ttc ccc aac ttg aca gat gtc agg gag	2204
Val Ser Gln Glu Lys Thr Met Phe Pro Asn Leu Thr Asp Val Arg Glu	
642 647 652 657	
gtg gtg aca gac cag ttc cta tgc agt ggg acc cag gag gat gag agt	2252
Val Val Thr Asp Gln Phe Leu Cys Ser Gly Thr Gln Glu Asp Glu Ser	
658 663 668 673	
ccc tgc aag gga gaa tct ggg gga gca gtt ttc ctt gag cgg aga ttc	2300
Pro Cys Lys Gly Glu Ser Gly Gly Ala Val Phe Leu Glu Arg Arg Phe	
674 679 684 689	
agg ttt ttt cag gtg ggt ctg gtg agc tgg ggt ctt tac aac ccc tgc	2348
Arg Phe Phe Gln Val Gly Leu Val Ser Trp Gly Leu Tyr Asn Pro Cys	
690 695 700 705	
ctt ggc tct gct gac aaa aac tcc cgc aaa agg gcc cct cgt agc aag	2396
Leu Gly Ser Ala Asp Lys Asn Ser Arg Lys Arg Ala Pro Arg Ser Lys	
706 711 716 721	
gtc ccg ccg cca cga gac ttt cac atc aat ctc ttc cgc atg cag ccc	2444
Val Pro Pro Pro Arg Asp Phe His Ile Asn Leu Phe Arg Met Gln Pro	
722 727 732 737	
tgg ctg agg cag cac ctg ggg gat gtc ctg aat ttt tta ccc ctc tag	2492
Trp Leu Arg Gln His Leu Gly Asp Val Leu Asn Phe Leu Pro Leu *	
738 743 748 753	
ccatggccac tgagccctct gctgccctgc cagaatctgc cgccctcca tttctacct	2552
ctgaatggcc acccttagac cctgtgatcc atcctctctc ctagctgagt aaatccgggt	2612
ctctaggatg ccagaggcag cgcacacaag ctgggaaatc ctcagggctc ctaccagcag	2672
gactgcctcg ctgccccacc tcccgtcct tggcctgtcc ccagattcct tccctgggtg	2732
acttgactca tgcttggttc actttcacat ggaatttccc agttatgaaa ttaataaaaa	2792
tcaatgggtt ccacaaaaaa aaaaaaaaaa	2821

<210> 180

<211> 1494

<212> DNA

<213> Homo sapiens

<220>  
 <221> CDS  
 <222> (184)..(498)

<400> 180

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gacccaaaac tctggcgcca gtcaccaact taggaagaca gcctaccctt ggtgtttaat	120
cattgcaggg tgtgcctgct tgattattca cccacacccc attggtgtct gatcaccacg	180
ggg atg cct gcc ttg gtc att cac cca cat tcc ctt ggt ggc aag tca	228
Met Pro Ala Leu Val Ile His Pro His Ser Leu Gly Gly Lys Ser	
1 5 10	
att gtg ggg aca cgt gct ttg gct gct cac cca cat tgc agc cca gga	276
Ile Val Gly Thr Arg Ala Leu Ala Ala His Pro His Cys Ser Pro Gly	
16 21 26 31	
ctg ctc ccc acc cgg ctt ctc cgt gtc tct acc ctt ctc ttt aaa ctt	324
Leu Leu Pro Thr Pro Leu Leu Arg Val Ser Thr Leu Leu Phe Lys Leu	
32 37 42 47	
gcc tcc ttt act atg ggc aac ctt cca ccc tcc att cct cct tct tct	372
Ala Ser Phe Thr Met Gly Asn Leu Pro Pro Ser Ile Pro Pro Ser Ser	
48 53 58 63	
ccc tta gcc tgt gtt ctc aaa aac tta aaa cct ctt caa ctc aca cct	420
Pro Leu Ala Cys Val Leu Lys Asn Leu Lys Pro Leu Gln Leu Thr Pro	
64 69 74 79	
gac cta aaa cct aag tgt ctt att ttc ttc tgc aac acc gct ggg ccc	468
Asp Leu Lys Pro Lys Cys Leu Ile Phe Phe Cys Asn Thr Ala Gly Pro	
80 85 90 95	
caa tac aaa ctc gac aat gat tcc aaa tag c cagaaaacgg cactttcgag	519
Gln Tyr Lys Leu Asp Asn Asp Ser Lys *	
96 101	
ttctccatcc tacaagttct agataattct tgtcataaaa tgggcaaattg gtctgagggtg	579
cctgacgtcc aggcattctt ttacacattg gtccctccct agtctctgct cccaatgtga	639
ctcatcccaa atctttcttc tttctctcct ttctgttctt tcggtctcca cccaagttc	699
cgagtccctct gaatccttct tttctatgga ctcatctgac ctccccctt ctccccaggc	759
tgctcctcgc caggctgagc cagggtcccaa ttctcactta gcctctgctc ccccacccta	819
taatcctttt atcacctccc ctccctcacac ctgggtccggc ttacagtttc attccgtgac	879
tagccctccc ccacctgccc agcaatttac tcttaaaaag gtggctggag cttaaaggcat	939
agtcaagggtt aatgctcctt tttctttatc ccaaatacaga agtggttagg ctctttttca	999
tcaaataataa aaatccagcc cagttcatgg ctcgtttggc agcaaccctg agacacttta	1059

cagccctaga ccctaaaagg tcaaaaggcc gtcttattct caaaatacat tttattaccc	1119
aatctgctcc cgacattaaa taaaactcca aaaattaaat tccggccctc aaaccccaca	1179
acaggattta attaacctcg ccttcaaggt gtacaataat agaaaaaagt tgcaattcct	1239
tgctccact gtgagacaaa cccagccac atctccagca cacaagaact tccaaacgcc	1299
tgaaccgcag cagccaggcg ttctccaga acctctccc acaggagctt gctacacgtg	1359
ccggaaatct ggccactggg caagggaatg cccgcagccc gggattctc ctaagccgcg	1419
tcccatctct ctgggacccc actgaaaatc ggactgttca actcacctgg cagccactcc	1479
cagagcccct ggaag	1494

<210> 181  
 <211> 1682  
 <212> DNA  
 <213> Homo sapiens

<220>  
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 <222> (889) .. (1056)

<400> 181	
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agggacctgg ctcccctctg agaggccgc ctgccctggg acaccagagg ctgtgctggt	180
ggcctgaggc tgggaacttg ggttcctggg ctctgctggc gcctgggctt tgtggggggc	240
gaagggtggt gcccgcgcg gcagggggct gtgtggggcc tctggggggc accttctgt	300
cagtggcga gggacgggtg gacagttgcc cctgcgcaa gggagccac tgccatcccc	360
cgtgggctgg cgctgcagtc gcgcacctg tgttgctgc tgacttgctt atgtctgttt	420
ggaagctgct tctgtttggc cacaggcctg tgttctggg ctgatggcca cagagctgac	480
acttgggggt tgagttccag acttgacag cctgggatcc gcttactcct ccgcgccacg	540
gctgctgtgc ttccagaggt ggcgtgatgc ctcccggggc cacggtgggg tgaaggatgg	600
cgagccggac ataccattgt tggatgtatt ttttttaaaa cagcaataat tagccatttt	660
aaaggaggga tgtacctgtg tgtgtgcatg tgcacgtgtt tgagcgtgtg tgtgtgtgtg	720
caagtgggtt cttggatatg tgtagtgtga gcatgtgtgc atgtgtgagc ctgtgcacgt	780
gcatgttgta ggtgcataag catgtacacg cgtgagcatg catgtgcgtg tacacgtgta	840

taggtgtaca tgtgcatgag ttgtgtacat gcgtgagcac gtgtatatag atg tac gtg	897
Met Tyr Val	
1	

tgt gtg cgc atg tgt gcg tgt aca tgt gtt tgt gtc ttg ggt atg cat	945
Cys Val Arg Met Cys Ala Cys Thr Cys Val Cys Val Leu Gly Met His	
4 9 14 19	

aag cat gca cgt gtg tat gaa tgt gcg tgt gta tgc atg agc acg tat	993
Lys His Ala Arg Val Tyr Glu Cys Ala Cys Val Cys Met Ser Thr Tyr	
20 25 30 35	

gca tgt gtg atg cgc atg ttc ttg tgt act tct ctg agg ggg cac ata	1041
Ala Cys Val Met Arg Met Phe Leu Cys Thr Ser Leu Arg Gly His Ile	
36 41 46 51	

tgt atg agt gta tga gtgcatacat atgcatatgg tgtacgtgtg tgtactttgt	1096
Cys Met Ser Val *	
52	

gtgtgggcat gtatgcgtat gagtacttgt gtgtggctgg tgtatgggtg agcatgcaca	1156
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tgtgtatgga tgcataatgtg agctgtacat gtagagtgt catgtgtgtt gcatgagcat	1216
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gcatgcgtgc gagtgcctgt gtgtgtactt gcatatatgt ggctgtgcag gtacccggcg	1276
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gtggtgggct ggcagtgcc ggggaagcag gtcctgctca cggcttccct gctgggcccc	1336
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agggcccggtg ctgagcctcc ctggccctc ttgcccctca gtggagcagg gcctgggtgg	1396
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agggcctggg cagctccagg gcaggctcgg ggaggccagg cttggggagc acaggggggtg	1456
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gggttcacct gctgctgttt gttcccgaac ctgtactgtg agcccacggc gggggcagat	1516
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tgttctgagg cccagatgt gccaaaacag ccccagggt gggggcgagc gagttctgag	1576
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gagaggggct gcggggggcg ggggtgggtg tgtgccctc cctgaatgg cccccaatgc	1636
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tgctgttttt caataaaacc agagttgaag gcaaaaaaaaa aaaaaa	1682
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<210> 182  
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 <212> DNA  
 <213> Homo sapiens

<220>  
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 <222> (118) .. (3159)

<400> 182

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gcccggcccg aggtccccgc cccggccgcc tggtctctct gccgcggagc cgccaag	117
atg ggg gac aag aaa gat gac aag gac tca ccc aag aag aac aag ggc	165

Met	Gly	Asp	Lys	Lys	Asp	Asp	Lys	Asp	Ser	Pro	Lys	Lys	Asn	Lys	Gly		
1				5					10					15			
aag	gag	cgc	cgg	gac	ctg	gat	gac	ctc	aag	aag	gag	gtg	gct	atg	aca	213	
Lys	Glu	Arg	Arg	Asp	Leu	Asp	Asp	Leu	Lys	Lys	Glu	Val	Ala	Met	Thr		
17					22				27					32			
gag	cac	aag	atg	tca	gtg	gaa	gag	gtc	tgc	cgg	aaa	tac	aac	aca	gac	261	
Glu	His	Lys	Met	Ser	Val	Glu	Glu	Val	Cys	Arg	Lys	Tyr	Asn	Thr	Asp		
33					38				43					48			
tgt	gtg	cag	ggt	ttg	acc	cac	agc	aaa	gcc	cag	gag	atc	ctg	gcc	cgg	309	
Cys	Val	Gln	Gly	Leu	Thr	His	Ser	Lys	Ala	Gln	Glu	Ile	Leu	Ala	Arg		
49					54				59					64			
gat	ggg	cct	aac	gca	ctc	acg	cca	cgg	cct	acc	acc	cca	gag	tgg	gtc	357	
Asp	Gly	Pro	Asn	Ala	Leu	Thr	Pro	Pro	Pro	Thr	Thr	Pro	Glu	Trp	Val		
65					70				75					80			
aag	ttt	tgc	cgg	cag	ctc	ttc	ggg	ggc	ttc	tcc	atc	ctg	ctg	tgg	atc	405	
Lys	Phe	Cys	Arg	Gln	Leu	Phe	Gly	Gly	Phe	Ser	Ile	Leu	Leu	Trp	Ile		
81					86				91					96			
ggg	gct	atc	ctc	tgc	ttc	ctg	gcc	tac	ggt	atc	cag	gcg	ggc	acc	gag	453	
Gly	Ala	Ile	Leu	Cys	Phe	Leu	Ala	Tyr	Gly	Ile	Gln	Ala	Gly	Thr	Glu		
97					102				107					112			
gac	gac	ccc	tct	ggt	gac	aac	ctg	tac	ctg	ggc	atc	gtg	ctg	gcg	gcc	501	
Asp	Asp	Pro	Ser	Gly	Asp	Asn	Leu	Tyr	Leu	Gly	Ile	Val	Leu	Ala	Ala		
113					118				123					128			
gtg	gtg	atc	atc	act	ggc	tgc	ttc	tcc	tac	tac	cag	gag	gcc	aag	agc	549	
Val	Val	Ile	Ile	Thr	Gly	Cys	Phe	Ser	Tyr	Tyr	Gln	Glu	Ala	Lys	Ser		
129					134				139					144			
tcc	aag	atc	atg	gag	tcc	ttc	aag	aac	atg	gtg	ccc	cag	caa	gcc	ctg	597	
Ser	Lys	Ile	Met	Glu	Ser	Phe	Lys	Asn	Met	Val	Pro	Gln	Gln	Ala	Leu		
145					150				155					160			
gtg	atc	cgg	gaa	ggt	gag	aag	atg	cag	gtg	aac	gct	gag	gag	gtg	gtg	645	
Val	Ile	Arg	Glu	Gly	Glu	Lys	Met	Gln	Val	Asn	Ala	Glu	Glu	Val	Val		
161					166				171					176			
gtc	ggg	gac	ctg	gtg	gag	atc	aag	ggt	gga	gac	cga	gtg	cca	gct	gac	693	
Val	Gly	Asp	Leu	Val	Glu	Ile	Lys	Gly	Gly	Asp	Arg	Val	Pro	Ala	Asp		
177					182				187					192			
ctg	cgg	atc	atc	tca	gcc	cac	ggc	tgc	aag	gtg	gac	aac	tcc	tcc	ctg	741	
Leu	Arg	Ile	Ile	Ser	Ala	His	Gly	Cys	Lys	Val	Asp	Asn	Ser	Ser	Leu		
193					198				203					208			
act	ggc	gaa	tcc	gag	ccc	cag	act	cgc	tct	ccc	gac	tgc	acg	cac	gac	789	
Thr	Gly	Glu	Ser	Glu	Pro	Gln	Thr	Arg	Ser	Pro	Asp	Cys	Thr	His	Asp		
209					214				219					224			
aac	ccc	ttg	gag	act	cgg	aac	atc	acc	ttc	ttt	tcc	acc	aac	tgt	gtg	837	
Asn	Pro	Leu	Glu	Thr	Arg	Asn	Ile	Thr	Phe	Phe	Ser	Thr	Asn	Cys	Val		

225	230	235	240	
gaa ggc acg gct cgg ggc gtg gtg gtg gcc acg ggc gac cgc act gtc				885
Glu Gly Thr Ala Arg Gly Val Val Val Ala Thr Gly Asp Arg Thr Val				
241	246	251	256	
atg ggc cgt atc gcc acc ctg gca tca ggg ctg gag gtg ggc aag acg				933
Met Gly Arg Ile Ala Thr Leu Ala Ser Gly Leu Glu Val Gly Lys Thr				
257	262	267	272	
ccc atc gcc atc gag att gag cac ttc atc cag ctc atc acc ggc gtg				981
Pro Ile Ala Ile Glu Ile Glu His Phe Ile Gln Leu Ile Thr Gly Val				
273	278	283	288	
gct gtc ttc ctg ggt gtc tcc ttc ttc atc ctc tcc ctc att ctc gga				1029
Ala Val Phe Leu Gly Val Ser Phe Phe Ile Leu Ser Leu Ile Leu Gly				
289	294	299	304	
tac acc tgg ctt gag gct gtc atc ttc ctc atc ggc atc atc gtg gcc				1077
Tyr Thr Trp Leu Glu Ala Val Ile Phe Leu Ile Gly Ile Ile Val Ala				
305	310	315	320	
aat gtc cca gag ggt ctg ctg gcc act gtc act gtg tgt ctg acg ctg				1125
Asn Val Pro Glu Gly Leu Leu Ala Thr Val Thr Val Cys Leu Thr Leu				
321	326	331	336	
acc gcc aag cgc atg gcc cgg aag aac tgc ctg gtg aag aac ctg gag				1173
Thr Ala Lys Arg Met Ala Arg Lys Asn Cys Leu Val Lys Asn Leu Glu				
337	342	347	352	
gct gta gaa acc ctg ggc tcc acg tcc acc atc tgc tca gat aag aca				1221
Ala Val Glu Thr Leu Gly Ser Thr Ser Thr Ile Cys Ser Asp Lys Thr				
353	358	363	368	
ggg acc ctc act cag aac cgc atg aca gtc gcc cac atg tgg ttt gac				1269
Gly Thr Leu Thr Gln Asn Arg Met Thr Val Ala His Met Trp Phe Asp				
369	374	379	384	
aac cag atc cac gag gct gac acc act gag gac cag tca ggg acc tca				1317
Asn Gln Ile His Glu Ala Asp Thr Thr Glu Asp Gln Ser Gly Thr Ser				
385	390	395	400	
ttt gac aag agt tcg cac acc tgg gtg gcc ctg tct cac atc gct ggg				1365
Phe Asp Lys Ser Ser His Thr Trp Val Ala Leu Ser His Ile Ala Gly				
401	406	411	416	
ctc tgc aat cgc gct gtc ttc aag ggt ggt cag gac aac atc cct gtg				1413
Leu Cys Asn Arg Ala Val Phe Lys Gly Gly Gln Asp Asn Ile Pro Val				
417	422	427	432	
ctc aag agg gat gtg gct ggg gat gcg tct gag tct gcc ctg ctc aag				1461
Leu Lys Arg Asp Val Ala Gly Asp Ala Ser Glu Ser Ala Leu Leu Lys				
433	438	443	448	
tgc atc gag ctg tcc tct ggc tcc gtg aag ctg atg cgt gaa cgc aac				1509
Cys Ile Glu Leu Ser Ser Gly Ser Val Lys Leu Met Arg Glu Arg Asn				
449	454	459	464	

aag aaa gtg gct gag att ccc ttc aat tcc acc aac aaa tac cag ctc	1557
Lys Lys Val Ala Glu Ile Pro Phe Asn Ser Thr Asn Lys Tyr Gln Leu	
465 470 475 480	
tcc atc cat gag acc gag gac ccc aac gac aac cga tac ctg ctg gtg	1605
Ser Ile His Glu Thr Glu Asp Pro Asn Asp Asn Arg Tyr Leu Leu Val	
481 486 491 496	
atg aag ggt gcc ccc gag cgc atc ctg gac cgc tgc tcc acc atc ctg	1653
Met Lys Gly Ala Pro Glu Arg Ile Leu Asp Arg Cys Ser Thr Ile Leu	
497 502 507 512	
cta cag ggc aag gag cag cct ctg gac gag gaa atg aag gag gcc ttc	1701
Leu Gln Gly Lys Glu Gln Pro Leu Asp Glu Glu Met Lys Glu Ala Phe	
513 518 523 528	
cag aat gcc tac ctt gag ctc ggt ggc ctg ggc gag cgc gtg ctt ggt	1749
Gln Asn Ala Tyr Leu Glu Leu Gly Gly Leu Gly Glu Arg Val Leu Gly	
529 534 539 544	
ttc tgc cat tat tac ctg ccc gag gag cag ttc ccc aag ggc ttt gcc	1797
Phe Cys His Tyr Tyr Leu Pro Glu Glu Gln Phe Pro Lys Gly Phe Ala	
545 550 555 560	
ttc gac tgt gat gag gtg aac ttc acc acg gac aac ctc tgc ttt gtg	1845
Phe Asp Cys Asp Asp Val Asn Phe Thr Thr Asp Asn Leu Cys Phe Val	
561 566 571 576	
ggc ctc atg tcc atg atc gac cca ccc cgg gca gcc gtc cct gac gcg	1893
Gly Leu Met Ser Met Ile Asp Pro Pro Arg Ala Ala Val Pro Asp Ala	
577 582 587 592	
gtg ggc aag tgt cgc agc gca ggc atc aag gtc atc atg gtc acc ggc	1941
Val Gly Lys Cys Arg Ser Ala Gly Ile Lys Val Ile Met Val Thr Gly	
593 598 603 608	
gat cac ccc atc acg gcc aag gcc att gcc aag ggt gtg ggc atc atc	1989
Asp His Pro Ile Thr Ala Lys Ala Ile Ala Lys Gly Val Gly Ile Ile	
609 614 619 624	
ttt gag ggc aac gag act gtg gag gac atc gcc gcc cgg ctc aac att	2037
Phe Glu Gly Asn Glu Thr Val Glu Asp Ile Ala Ala Arg Leu Asn Ile	
625 630 635 640	
ccc gtc agc cag gtt aac ccc cgg gat gcc aag gcc tgc gtg atc cac	2085
Pro Val Ser Gln Val Asn Pro Arg Asp Ala Lys Ala Cys Val Ile His	
641 646 651 656	
ggc acc gac ctc aag gac ttc acc tcc gag caa atc gac gag atc ctg	2133
Gly Thr Asp Leu Lys Asp Phe Thr Ser Glu Gln Ile Asp Glu Ile Leu	
657 662 667 672	
cag aat cac acc gag atc gtc ttc gcc cgc aca tcc ccc cag cag aag	2181
Gln Asn His Thr Glu Ile Val Phe Ala Arg Thr Ser Pro Gln Gln Lys	
673 678 683 688	



ctc atc att gtg gag ggc tgt cag aga cag ggt gca att gtg gct gtg	2229
Leu Ile Ile Val Glu Gly Cys Gln Arg Gln Gly Ala Ile Val Ala Val	
689 694 699 704	
acc ggg gat ggt gtg aac gac tcc ccc gct ctg aag aag gcc gac att	2277
Thr Gly Asp Gly Val Asn Asp Ser Pro Ala Leu Lys Lys Ala Asp Ile	
705 710 715 720	
ggg gtg gcc atg ggc atc gct ggc tct gac gtc tcc aag cag gca gct	2325
Gly Val Ala Met Gly Ile Ala Gly Ser Asp Val Ser Lys Gln Ala Ala	
721 726 731 736	
gac atg atc ctg ctg gac gac aac ttt gcc tcc atc gtc aca ggg gtg	2373
Asp Met Ile Leu Leu Asp Asp Asn Phe Ala Ser Ile Val Thr Gly Val	
737 742 747 752	
gag gag ggc cgc ctg atc ttc gac aac cta aag aag tcc att gcc tac	2421
Glu Glu Gly Arg Leu Ile Phe Asp Asn Leu Lys Lys Ser Ile Ala Tyr	
753 758 763 768	
acc ctg acc agc aat atc ccg gag atc acg ccc ttc ctg ctg ttc atc	2469
Thr Leu Thr Ser Asn Ile Pro Glu Ile Thr Pro Phe Leu Leu Phe Ile	
769 774 779 784	
atg gcc aac atc ccg ctg ccc ctg ggc acc atc acc atc ctc tgc atc	2517
Met Ala Asn Ile Pro Leu Pro Leu Gly Thr Ile Thr Ile Leu Cys Ile	
785 790 795 800	
gat ctg ggc act gac atg gtc cct gcc atc tca ctg gcg tac gag gct	2565
Asp Leu Gly Thr Asp Met Val Pro Ala Ile Ser Leu Ala Tyr Glu Ala	
801 806 811 816	
gcc gaa agc gac atc atg aag aga cag ccc agg aac ccg cgg acg gac	2613
Ala Glu Ser Asp Ile Met Lys Arg Gln Pro Arg Asn Pro Arg Thr Asp	
817 822 827 832	
aaa ttg gtc aat gag aga ctc atc agc atg gcc tac ggg cag att gga	2661
Lys Leu Val Asn Glu Arg Leu Ile Ser Met Ala Tyr Gly Gln Ile Gly	
833 838 843 848	
atg atc cag gct ctc ggt ggc ttc ttc tct tac ttt gtg atc ctg gca	2709
Met Ile Gln Ala Leu Gly Gly Phe Phe Ser Tyr Phe Val Ile Leu Ala	
849 854 859 864	
gaa aat ggc ttc ttg ccc ggc aac ctg gtg ggc atc cgg ctg aac tgg	2757
Glu Asn Gly Phe Leu Pro Gly Asn Leu Val Gly Ile Arg Leu Asn Trp	
865 870 875 880	
gat gac cgc acc gtc aat gac ctg gaa gac agt tac ggg cag cag tgg	2805
Asp Asp Arg Thr Val Asn Asp Leu Glu Asp Ser Tyr Gly Gln Gln Trp	
881 886 891 896	
aca tac gag cag agg aag gtg gtg gag ttc acc tgc cac acg gcc ttc	2853
Thr Tyr Glu Gln Arg Lys Val Val Glu Phe Thr Cys His Thr Ala Phe	
897 902 907 912	
ttt gtg agc atc gtt gtc gtc cag tgg gcc gat ctg atc atc tgc aag	2901

Phe Val Ser Ile Val Val Val Gln Trp Ala Asp Leu Ile Ile Cys Lys	
913 918 923 928	
acc cgg agg aac tgc gtc ttc cag cag ggc atg aag aac aag atc ctg	2949
Thr Arg Arg Asn Ser Val Phe Gln Gln Gly Met Lys Asn Lys Ile Leu	
929 934 939 944	
atc ttc ggg ctg ttt gag gag acg gcc ctg gct gcc ttc ctg tcc tac	2997
Ile Phe Gly Leu Phe Glu Glu Thr Ala Leu Ala Ala Phe Leu Ser Tyr	
945 950 955 960	
tgc ccc ggc atg gac gtg gcc ctg cgc atg tac cct ctc aag ccc agc	3045
Cys Pro Gly Met Asp Val Ala Leu Arg Met Tyr Pro Leu Lys Pro Ser	
961 966 971 976	
tgg tgg ttc tgt gcc ttc ccc tac agt ttc ctc atc ttc gtc tac gac	3093
Trp Trp Phe Cys Ala Phe Pro Tyr Ser Phe Leu Ile Phe Val Tyr Asp	
977 982 987 992	
gaa atc cgc aaa ctc atc ctg cgc agg aac cca ggg ggt tgg gtg gag	3141
Glu Ile Arg Lys Leu Ile Leu Arg Arg Asn Pro Gly Gly Trp Val Glu	
993 998 1003 1008	
aag gaa acc tac tac tga cctcag cccaccaca tcgcccattc cttccccgtc	3195
Lys Glu Thr Tyr Tyr *	
1009 1014	
ccgcaggccc aggaccgccc ctgtcagtc ccccaatttt gtattctggg gggaggagcc	3255
ctctcttcct gtggccccac cttggcccc accccctcca ctatctcctg ccgccccac	3315
tctggctggc ttctctcccc tgccccaaac ctctctctc tctcttttct gtgtcagttt	3375
ctctccctct cctcaccct ctatccattc ctcccgcccc agccacctcc ctgggctctt	3435
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tatcagtggg gagagagaaa aaaaaaaaa a	3526

<210> 183  
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 <212> DNA  
 <213> Homo sapiens

<220>  
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 <222> (38)..(1306)

<220>  
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 <222> (1)..(1428)  
 <223> n = a,t,c or g

<400> 183

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ccc gcc tcc aag cgc gcc ccg agc agc ccc gtg gct aag ccg ggt cct	103
Pro Ala Ser Lys Arg Ala Pro Ser Ser Pro Val Ala Lys Pro Gly Pro	
7 12 17 22	
gtc aag acg ctc act cgg aag aaa aac aag aag aaa aaa agg ttt tgg	151
Val Lys Thr Leu Thr Arg Lys Lys Asn Lys Lys Lys Lys Arg Phe Trp	
23 28 33 38	
aaa agc aag gcg cgg gaa gta agc aag aag cca gca agc ggc ccc ggt	199
Lys Ser Lys Ala Arg Glu Val Ser Lys Lys Pro Ala Ser Gly Pro Gly	
39 44 49 54	
gct gtg gtg cga cct cca aag gca cca gaa gac ttt tct caa aac tgg	247
Ala Val Val Arg Pro Pro Lys Ala Pro Glu Asp Phe Ser Gln Asn Trp	
55 60 65 70	
aag gcg ctg caa gag tgg ctg ctg aaa caa aaa tct cag gcc cca gaa	295
Lys Ala Leu Gln Glu Trp Leu Leu Lys Gln Lys Ser Gln Ala Pro Glu	
71 76 81 86	
aag cct ctt gtc atc tct cag atg ggt tcc aaa aag aag ccc aaa att	343
Lys Pro Leu Val Ile Ser Gln Met Gly Ser Lys Lys Lys Pro Lys Ile	
87 92 97 102	
atc cag caa aac aaa aaa gag acc tcg cct caa gtg aag gga gag gag	391
Ile Gln Gln Asn Lys Lys Glu Thr Ser Pro Gln Val Lys Gly Glu Glu	
103 108 113 118	
atg ccg gca gga aaa gac cag gag gcc agc agg ggc tct gtt cct tca	439
Met Pro Ala Gly Lys Asp Gln Glu Ala Ser Arg Gly Ser Val Pro Ser	
119 124 129 134	
ggg tcc aag atg gac agg agg gcg cca gta cct cgc acc aag gcc agt	487
Gly Ser Lys Met Asp Arg Arg Ala Pro Val Pro Arg Thr Lys Ala Ser	
135 140 145 150	
gga aca gag cac aat aag aaa gga acc aag gaa agg aca aat ggt gat	535
Gly Thr Glu His Asn Lys Lys Gly Thr Lys Glu Arg Thr Asn Gly Asp	
151 156 161 166	
att gtt cca gaa cga ggg gac atc gag cat aag aag cgg aaa gct aag	583
Ile Val Pro Glu Arg Gly Asp Ile Glu His Lys Lys Arg Lys Ala Lys	
167 172 177 182	
gag gca gcc cca gcc cca ccc acc gag gaa gac atc tgg ttt gac gac	631
Glu Ala Ala Pro Ala Pro Pro Thr Glu Glu Asp Ile Trp Phe Asp Asp	
183 188 193 198	
gtg gac cca gcg gat atc gaa gct gcc ata ggt cca gag gcg gcc aag	679
Val Asp Pro Ala Asp Ile Glu Ala Ala Ile Gly Pro Glu Ala Ala Lys	
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ttaagatt

1428

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<212> DNA  
<213> Homo sapiens

<220>  
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<222> (212)..(1561)

<400> 184

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gctgctggga ggatggaagc gctggcgccg ggggcgggcg gcccggcattg tagtagcggg	180
ggtgctgggc gacgtgggcc gcagcccccg t atg cag tac cac gcg ctg tgc	232
Met Gln Tyr His Ala Leu Ser	
1 5	
ttg gcc atg cac ggc ttc tgc gtg acc ctc ctg ggg ttc tgc aac tcc	280
Leu Ala Met His Gly Phe Ser Val Thr Leu Leu Gly Phe Cys Asn Ser	
8 13 18 23	
aaa ccc cat gat gag ctc ttg cag aac aac aga att cag att gtg ggg	328
Lys Pro His Asp Glu Leu Leu Gln Asn Asn Arg Ile Gln Ile Val Gly	
24 29 34 39	
ttg aca gaa ctt cag agt ctt gca gtt ggg ccc cga gtt ttc cag tac	376
Leu Thr Glu Leu Gln Ser Leu Ala Val Gly Pro Arg Val Phe Gln Tyr	
40 45 50 55	
gga gtc aaa gtt gta ctt cag gct atg tac ttg ctg tgg aag ttg atg	424
Gly Val Lys Val Val Leu Gln Ala Met Tyr Leu Leu Trp Lys Leu Met	
56 61 66 71	
tgg agg gag cca ggt gcc tat atc ttt ctc cag aac ccc cca ggt ctg	472
Trp Arg Glu Pro Gly Ala Tyr Ile Phe Leu Gln Asn Pro Pro Gly Leu	
72 77 82 87	
cct agc att gct gtc tgc tgg ttc gtg ggc tgc ctt tgt gga agc aag	520
Pro Ser Ile Ala Val Cys Trp Phe Val Gly Cys Leu Cys Gly Ser Lys	
88 93 98 103	
ctc gtc att gac tgg cac aac tat ggc tac tcc atc atg ggt ctg gtg	568
Leu Val Ile Asp Trp His Asn Tyr Gly Tyr Ser Ile Met Gly Leu Val	
104 109 114 119	
cat ggc ccc aac cat ccc ctc gtt ctg ctg gcc aag tgg tgc aca tcc	616
His Gly Pro Asn His Pro Leu Val Leu Leu Ala Lys Trp Cys Thr Ser	
120 125 130 135	

agc ctc cgt gtg cat gtc cag ctg ctg cgt gta ctt ccg gcc ttg ggc	664
Ser Leu Arg Val His Val Gln Leu Leu Arg Val Leu Pro Ala Leu Gly	
136 141 146 151	
cat tgg ctg gct gtg gcc ttc gcc ctg ata gtt tgt tca ctg gca gtg	712
His Trp Leu Ala Val Ala Phe Ala Leu Ile Val Cys Ser Leu Ala Val	
152 157 162 167	
gtg aca gca gca gca aac agc tta gtt gag caa atg gag cag aat ggt	760
Val Thr Ala Ala Ala Asn Ser Leu Val Glu Gln Met Glu Gln Asn Gly	
168 173 178 183	
caa tgg tac gag aag ttc ttt ggg cgc ctg tcc cac ctg aac ctg tgt	808
Gln Trp Tyr Glu Lys Phe Phe Gly Arg Leu Ser His Leu Asn Leu Cys	
184 189 194 199	
gtt acc aat gct atg cga gaa gac ctg gcg gat aac tgg cac atc agg	856
Val Thr Asn Ala Met Arg Glu Asp Leu Ala Asp Asn Trp His Ile Arg	
200 205 210 215	
gct gtg acc gtc tac gac aag ccc gca tct ttc ttt aaa gag aca cct	904
Ala Val Thr Val Tyr Asp Lys Pro Ala Ser Phe Phe Lys Glu Thr Pro	
216 221 226 231	
ctg gac ctg cag cac cgg ctc ttc atg aag ctg ggc agc atg cac tct	952
Leu Asp Leu Gln His Arg Leu Phe Met Lys Leu Gly Ser Met His Ser	
232 237 242 247	
ccg ttc agg gcc cgc tca gaa cct gag gac cca gtc acg gag cgg tcg	1000
Pro Phe Arg Ala Arg Ser Glu Pro Glu Asp Pro Val Thr Glu Arg Ser	
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Ala Phe Thr Glu Arg Asp Ala Gly Ser Gly Leu Val Thr Arg Leu Arg	
264 269 274 279	
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Glu Arg Pro Ala Leu Leu Val Ser Ser Thr Ser Trp Thr Glu Asp Glu	
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gac ttc tcc atc ctg ctg gca gct tta gaa agc aaa ggg cct ctg agg	1144
Asp Phe Ser Ile Leu Leu Ala Ala Leu Glu Ser Lys Gly Pro Leu Arg	
296 301 306 311	
gag tat tat agc cgc ctc atc cac cag aag cac ttc cag cac atc cag	1192
Glu Tyr Tyr Ser Arg Leu Ile His Gln Lys His Phe Gln His Ile Gln	
312 317 322 327	
gtc tgc acc ccc tgg ctg gag gcc gag gac tac ccc ctg ctt cta ggg	1240
Val Cys Thr Pro Trp Leu Glu Ala Glu Asp Tyr Pro Leu Leu Leu Gly	
328 333 338 343	
tcg gcg gac ctg ggt gtc tgt ctg cac acg tcc tcc agt ggc ctg gac	1288
Ser Ala Asp Leu Gly Val Cys Leu His Thr Ser Ser Ser Gly Leu Asp	
344 349 354 359	
ctg ccc atg aag gtg gtg gac atg ttc ggg tgc tgt ttg cct gtg tgt	1336

Leu Pro Met Lys Val Val Asp Met Phe Gly Cys Cys Leu Pro Val Cys	
360 365 370 375	
gct gtg aac ttc aag tgt tta cat gag ctg gtg aaa cat gaa gaa aat	1384
Ala Val Asn Phe Lys Cys Leu His Glu Leu Val Lys His Glu Glu Asn	
376 381 386 391	
ggc ctg gtc ttt gag gac tca gag gaa ctg gca gct cag ctg cag atg	1432
Gly Leu Val Phe Glu Asp Ser Glu Glu Leu Ala Ala Gln Leu Gln Met	
392 397 402 407	
ctt ttc tca aac ttt cct gat cct gcg ggc aag cta aac cag ttc cgg	1480
Leu Phe Ser Asn Phe Pro Asp Pro Ala Gly Lys Leu Asn Gln Phe Arg	
408 413 418 423	
aag aac ctg cgg gag tcg cag cag ctc cga tgg gat gag agc tgg gtg	1528
Lys Asn Leu Arg Glu Ser Gln Gln Leu Arg Trp Asp Glu Ser Trp Val	
424 429 434 439	
cag act gtg ctc cct ttg gtt atg gac aca taa ctccctggg ccagaggcta	1579
Gln Thr Val Leu Pro Leu Val Met Asp Thr *	
440 445 450	
aaaccccagg acccctgctg tccttcccg cagcttcttct tggagtctca gggcaaaccc	1639
tttcgagcag cacctcccag tggccagaag ctgaaatgac agcagtggta ctgcctggta	1699
aaagaattgg ttctgtgacc cgggaagctt tgggtggcct tgatttcttc tctggaggct	1759
tggaaacgct tcctctcttc ttctgttctt cagcggccat gccctgcta gcgtattact	1819
gttctgtgac ttccctgtga cctctgcaga actcctcatc ctgcgttttg totccagggtg	1879
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gctgctggga ggatggaagc gctggcgccg ggggcgggcg gcccgcatg tagtagcggt	180
/gggtgctgggc gacgtgggccc gcagcccccg t atg cag tac cac gcg ctg tgc	232
Met Gln Tyr His Ala Leu Ser	
1 5	
ttg gcc atg cac ggc ttc tgc gtg acc ctc ctg ggg ttc tgc aac tcc	280
Leu Ala Met His Gly Phe Ser Val Thr Leu Leu Gly Phe Cys Asn Ser	
8 13 18 23	
aaa ccc cat gat gag ctc ttg cag aac aac aga att cag att gtg ggg	328
Lys Pro His Asp Glu Leu Leu Gln Asn Asn Arg Ile Gln Ile Val Gly	
24 29 34 39	
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Leu Thr Glu Leu Gln Ser Leu Ala Val Gly Pro Arg Val Phe Gln Tyr	
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gga gtc aaa gtt gta ctt cag gct atg tac ttg ctg tgg aag ttg atg	424
Gly Val Lys Val Val Leu Gln Ala Met Tyr Leu Leu Trp Lys Leu Met	
56 61 66 71	
tgg agg gag cca ggt gcc tat atc ttt ctc cag aac ccc cca ggt ctg	472
Trp Arg Glu Pro Gly Ala Tyr Ile Phe Leu Gln Asn Pro Pro Gly Leu	
72 77 82 87	
cct agc att gct gtc tgc tgg ttc gtg ggc tgc ctt tgt gga agc aag	520
Pro Ser Ile Ala Val Cys Trp Phe Val Gly Cys Leu Cys Gly Ser Lys	
88 93 98 103	
ctc gtc att gac tgg cac aac tat ggc tac tcc atc atg ggt ctg gtg	568
Leu Val Ile Asp Trp His Asn Tyr Gly Tyr Ser Ile Met Gly Leu Val	
104 109 114 119	
cat ggc ccc aac cat ccc ctc gtt ctg ctg gcc aag tgg tac gag aag	616
His Gly Pro Asn His Pro Leu Val Leu Leu Ala Lys Trp Tyr Glu Lys	
120 125 130 135	
ttc ttt ggg cgc ctg tcc cac ctg aac ctg tgt gtt acc aat gct atg	664
Phe Phe Gly Arg Leu Ser His Leu Asn Leu Cys Val Thr Asn Ala Met	
136 141 146 151	
cga gaa gac ctg gcg gat aac tgg cac atc agg gct gtg acc gtc tac	712
Arg Glu Asp Leu Ala Asp Asn Trp His Ile Arg Ala Val Thr Val Tyr	
152 157 162 167	
gac aag ccc gca tct ttc ttt aaa gag aca cct ctg gac ctg cag cac	760
Asp Lys Pro Ala Ser Phe Phe Lys Glu Thr Pro Leu Asp Leu Gln His	
168 173 178 183	
cgg ctc ttc atg aag ctg ggc agc atg cac tct ccg ttc agg gcc cgc	808
Arg Leu Phe Met Lys Leu Gly Ser Met His Ser Pro Phe Arg Ala Arg	
184 189 194 199	
tca gaa cct gag gac cca gtc acg gag cgg tgc gcc ttc acg gag cgg	856
Ser Glu Pro Glu Asp Pro Val Thr Glu Arg Ser Ala Phe Thr Glu Arg	





gacctctgca gaactcctca tcctgcgttt ggtctccagg tgtccccctt ctgccgtgtt 1738  
cctaacattt tgattcctgt cttgaaaaaa gcacctgctg caccgtaagc ccagggatgt 1798  
ggcagctgca gtgggcttgg ctttgtgagg aactgagtgt gtccacgttg ggggaacatc 1858  
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aaaaaaaaa 1927

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gctgctggga ggatggaagc gctggcgccg ggggcgggcy gcccggcatt tagtagcggt 180  
ggtgctgggc gacgtgggac gcagcccccg t atg cag tac cac gcg ctg tgc 232  
Met Gln Tyr His Ala Leu Ser  
1 5  
ttg gcc atg cac ggc ttc tgc gtg acc ctc ctg ggg ttc tgc aac tcc 280  
Leu Ala Met His Gly Phe Ser Val Thr Leu Leu Gly Phe Cys Asn Ser  
8 13 18 23  
aaa ccc cat gat gag ctc ttg cag aac aac aga att cag att gtg ggg 328  
Lys Pro His Asp Glu Leu Leu Gln Asn Asn Arg Ile Gln Ile Val Gly  
24 29 34 39  
ttg aca gaa ctt cag agt ctt gca gtt ggg ccc cga gtt ttc cag tac 376  
Leu Thr Glu Leu Gln Ser Leu Ala Val Gly Pro Arg Val Phe Gln Tyr  
40 45 50 55  
gga gtc aaa gtt gta ctt cag gct atg tac ttg ctg tgg aag ttg atg 424  
Gly Val Lys Val Val Leu Gln Ala Met Tyr Leu Leu Trp Lys Leu Met  
56 61 66 71  
tgg agg gag cca ggt gcc tat atc ttt ctc cag aac ccc cca ggt ctg 472  
Trp Arg Glu Pro Gly Ala Tyr Ile Phe Leu Gln Asn Pro Pro Gly Leu  
72 77 82 87  
cct agc att gct gtc tgc tgg ttc gtg ggc tgc ctt tgt gga agc aag 520  
Pro Ser Ile Ala Val Cys Trp Phe Val Gly Cys Leu Cys Gly Ser Lys  
88 93 98 103

ctc gtc att gac tgg cac aac tat ggc tac tcc atc atg ggt ctg gtg	568
Leu Val Ile Asp Trp His Asn Tyr Gly Tyr Ser Ile Met Gly Leu Val	
104 109 114 119	
cat ggc ccc aac cat ccc ctc gtt ctg ctg gcc aag tgg tgc aca tcc	616
His Gly Pro Asn His Pro Leu Val Leu Leu Ala Lys Trp Cys Thr Ser	
120 125 130 135	
agc ctc cgt gtg cat gtc cag ctg ctg cgt gta ctt ccg gcc ttg ggc	664
Ser Leu Arg Val His Val Gln Leu Leu Arg Val Leu Pro Ala Leu Gly	
136 141 146 151	
cat tgg ctg gct gtg gcc ttc gcc ctg ata gtt tgt tca ctg gca gtg	712
His Trp Leu Ala Val Ala Phe Ala Leu Ile Val Cys Ser Leu Ala Val	
152 157 162 167	
gtg aca gca gca gca aac agc tta gtt gag caa atg gag cag aat ggt	760
Val Thr Ala Ala Ala Asn Ser Leu Val Glu Gln Met Glu Gln Asn Gly	
168 173 178 183	
caa tgg tac gag aag ttc ttt ggg cgc ctg tcc cac ctg aac ctg tgt	808
Gln Trp Tyr Glu Lys Phe Phe Gly Arg Leu Ser His Leu Asn Leu Cys	
184 189 194 199	
gtt acc aat gct atg cga gaa gac ctg gcg gat aac tgg cac atc agg	856
Val Thr Asn Ala Met Arg Glu Asp Leu Ala Asp Asn Trp His Ile Arg	
200 205 210 215	
gct gtg acc gtc tac gac aag ccc gca tct ttc ttt aaa gag aca cct	904
Ala Val Thr Val Tyr Asp Lys Pro Ala Ser Phe Phe Lys Glu Thr Pro	
216 221 226 231	
ctg gac ctg cag cac cgg ctc ttc atg aag ctg ggc agc atg cac tct	952
Leu Asp Leu Gln His Arg Leu Phe Met Lys Leu Gly Ser Met His Ser	
232 237 242 247	
ccg ttc agg gcc cgc tca gaa cct gag gac cca gtc acg gag cgg tcg	1000
Pro Phe Arg Ala Arg Ser Glu Pro Glu Asp Pro Val Thr Glu Arg Ser	
248 253 258 263	
gcc ttc acg gag cgg gat gct ggg agc ggg ctg gtg acg cgt ctc cgt	1048
Ala Phe Thr Glu Arg Asp Ala Gly Ser Gly Leu Val Thr Arg Leu Arg	
264 269 274 279	
gag cgg cca gcc ctg ctg gtc agc agc acg agc tgg aca gag gac gaa	1096
Glu Arg Pro Ala Leu Leu Val Ser Ser Thr Ser Trp Thr Glu Asp Glu	
280 285 290 295	
gac ttc tcc atc ctg ctg gca gct tta gaa aag ttt gaa caa ctg act	1144
Asp Phe Ser Ile Leu Leu Ala Ala Leu Glu Lys Phe Glu Gln Leu Thr	
296 301 306 311	
ctt gat gga cac aac ctt cct tct ctc gtc tgt gtg ata aca ggc aaa	1192
Leu Asp Gly His Asn Leu Pro Ser Leu Val Cys Val Ile Thr Gly Lys	
312 317 322 327	

ggg cct ctg agg gag tat tat agc cgc ctc atc cac cag aag cac ttc	1240
Gly Pro Leu Arg Glu Tyr Tyr Ser Arg Leu Ile His Gln Lys His Phe	
328 333 338 343	
cag cac atc cag gtc tgg acc ccc tgg ctg gag gcc gag gac tac ccc	1288
Gln His Ile Gln Val Cys Thr Pro Trp Leu Glu Ala Glu Asp Tyr Pro	
344 349 354 359	
ctg ctt cta ggg tgg ggc gac ctg ggt gtc tgt ctg cac acg tcc tcc	1336
Leu Leu Leu Gly Ser Ala Asp Leu Gly Val Cys Leu His Thr Ser Ser	
360 365 370 375	
agt ggc ctg gac ctg ccc atg aag gtg gtg gac atg ttc ggg tgc tgt	1384
Ser Gly Leu Asp Leu Pro Met Lys Val Val Asp Met Phe Gly Cys Cys	
376 381 386 391	
ttg cct gtg tgt gct gtg aac ttc aag tgt tta cat gag ctg gtg aaa	1432
Leu Pro Val Cys Ala Val Asn Phe Lys Cys Leu His Glu Leu Val Lys	
392 397 402 407	
cat gaa gaa aat ggc ctg gtc ttt gag gac tca gag gaa ctg gca gct	1480
His Glu Glu Asn Gly Leu Val Phe Glu Asp Ser Glu Glu Leu Ala Ala	
408 413 418 423	
cag ctg cag atg ctt ttc tca aac ttt cct gat cct ggc ggc aag cta	1528
Gln Leu Gln Met Leu Phe Ser Asn Phe Pro Asp Pro Ala Gly Lys Leu	
424 429 434 439	
aac cag ttc cgg aag aac ctg cgg gag tgg cag cag ctc cga tgg gat	1576
Asn Gln Phe Arg Lys Asn Leu Arg Glu Ser Gln Gln Leu Arg Trp Asp	
440 445 450 455	
gag agc tgg gtg cag act gtg ctc cct ttg gtt atg gac aca taa ctc	1624
Glu Ser Trp Val Gln Thr Val Leu Pro Leu Val Met Asp Thr *	
456 461 466	
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tctcagggca aaccctttcg agcagcacct cccagtggcc agaagctgaa atgacagcag	1744
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tcttctctgg aggcttggaa acgcttctc tcttcttctg ttcttcacgc cccatgcccc	1864
tgctagcgta ttactgttct gtgacttccc tgtgacctct gcagaactcc tcatcctgcg	1924
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 <212> DNA  
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 <222> (144)..(3425)

<400> 187

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agaccacggg	cgaccggagc	gcg	atg gct ggg gcg gcg gga ctc acg gca			170
			Met Ala Gly Ala Ala Gly Leu Thr Ala			
			1	5		
gaa gtg agc tgg aag gtc ttg gag cga aga gct cgg acc aag cgc tca						218
Glu Val Ser Trp Lys Val Leu Glu Arg Arg Ala Arg Thr Lys Arg Ser						
10	15	20	25			
ggc tca gtt tat gaa cct ctt aaa agc att aat ctt cca aga cct gat						266
Gly Ser Val Tyr Glu Pro Leu Lys Ser Ile Asn Leu Pro Arg Pro Asp						
26	31	36	41			
aat gaa act ctc tgg gat aag ttg gac cat tat tac aga att gtc aag						314
Asn Glu Thr Leu Trp Asp Lys Leu Asp His Tyr Tyr Arg Ile Val Lys						
42	47	52	57			
tca aca ttg ctg ctg tat caa agt cca act acc ggt ctc ttt ccc act						362
Ser Thr Leu Leu Leu Tyr Gln Ser Pro Thr Thr Gly Leu Phe Pro Thr						
58	63	68	73			
aaa aca tgc ggt ggt gac cag aag gcc aag atc cag gac agc cta tac						410
Lys Thr Cys Gly Gly Asp Gln Lys Ala Lys Ile Gln Asp Ser Leu Tyr						
74	79	84	89			
tgc gct gct ggg gcc tgg gct ttg gct ctt gca tac agg cga att gat						458
Cys Ala Ala Gly Ala Trp Ala Leu Ala Leu Ala Tyr Arg Arg Ile Asp						
90	95	100	105			
gat gac aag gga agg acc cat gag ctg gag cac tca gct ata aaa tgc						506
Asp Asp Lys Gly Arg Thr His Glu Leu Glu His Ser Ala Ile Lys Cys						
106	111	116	121			
atg aga gga att ctc tac tgc tat atg cgt cag gcc gat aag gtc cag						554
Met Arg Gly Ile Leu Tyr Cys Tyr Met Arg Gln Ala Asp Lys Val Gln						
122	127	132	137			
cag ttt aag cag gat cca cgc cca aca aca tgt ctt cac tct gtt ttc						602
Gln Phe Lys Gln Asp Pro Arg Pro Thr Thr Cys Leu His Ser Val Phe						
138	143	148	153			
aat gtg cat aca gga gat gag ttg ctt tcc tat gag gaa tat ggt cat						650
Asn Val His Thr Gly Asp Glu Leu Leu Ser Tyr Glu Glu Tyr Gly His						
154	159	164	169			

ctt cag ata aat gca gtg tca ctt tat ctc ctt tac ctt gtg gaa atg	698
Leu Gln Ile Asn Ala Val Ser Leu Tyr Leu Leu Tyr Leu Val Glu Met	
170 175 180 185	
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Ile Ser Ser Gly Leu Gln Ile Ile Tyr Asn Thr Asp Glu Val Ser Phe	
186 191 196 201	
att caa aac ctt gta ttt tgt gtg gaa aga gtt tac cgt gtg cct gac	794
Ile Gln Asn Leu Val Phe Cys Val Glu Arg Val Tyr Arg Val Pro Asp	
202 207 212 217	
ttt ggt gtc tgg gaa aga gga agc aaa tat aat aat <sup>4</sup> ggc agc aca gag	842
Phe Gly Val Trp Glu Arg Gly Ser Lys Tyr Asn Asn Gly Ser Thr Glu	
218 223 228 233	
cta cat tcg agc tcg gtt ggt tta gca aaa gca gct cta gaa gca att	890
Leu His Ser Ser Ser Val Gly Leu Ala Lys Ala Ala Leu Glu Ala Ile	
234 239 244 249	
aat gga ttc aac ctt ttt ggc aac cag ggc tgt tcg tgg tca gtt ata	938
Asn Gly Phe Asn Leu Phe Gly Asn Gln Gly Cys Ser Trp Ser Val Ile	
250 255 260 265	
ttt gtg gat ctc gat gct cac aat cgc aac agg caa act ttg tgc tcg	986
Phe Val Asp Leu Asp Ala His Asn Arg Asn Arg Gln Thr Leu Cys Ser	
266 271 276 281	
ctg tta ccc aga gaa tca aga tca cat aat aca gat gct gcc ctg ctc	1034
Leu Leu Pro Arg Glu Ser Arg Ser His Asn Thr Asp Ala Ala Leu Leu	
282 287 292 297	
ccc tgc atc agt tat cct gca ttt gcc ctg gat gat gaa gtt ctt ttt	1082
Pro Cys Ile Ser Tyr Pro Ala Phe Ala Leu Asp Asp Glu Val Leu Phe	
298 303 308 313	
agc cag aca ctt gat aaa gtg gtt aga aaa tta aaa gga aaa tat gga	1130
Ser Gln Thr Leu Asp Lys Val Val Arg Lys Leu Lys Gly Lys Tyr Gly	
314 319 324 329	
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Phe Lys Arg Phe Leu Arg Asp Gly Tyr Arg Thr Ser Leu Glu Asp Pro	
330 335 340 345	
aac aga tgc tac tac aag cca gct gaa att aag cta ttt gat ggc att	1226
Asn Arg Cys Tyr Tyr Lys Pro Ala Glu Ile Lys Leu Phe Asp Gly Ile	
346 351 356 361	
gaa tgt gaa ttt ccc ata ttt ttc ctt tat atg atg att gat gga gtt	1274
Glu Cys Glu Phe Pro Ile Phe Phe Leu Tyr Met Met Ile Asp Gly Val	
362 367 372 377	
ttt aga ggc aat cct aag caa gta cag gaa tat cag gat ctt ttg act	1322
Phe Arg Gly Asn Pro Lys Gln Val Gln Glu Tyr Gln Asp Leu Leu Thr	
378 383 388 393	

cca gta ctt cat cat acc aca gaa gga tat cct gtt gta cca aag tac	1370
Pro Val Leu His His Thr Thr Glu Gly Tyr Pro Val Val Pro Lys Tyr	
394 399 404 409	
tat tat gtg cca gct gac ttt gta gaa tat gaa aaa aat aac cct ggt	1418
Tyr Tyr Val Pro Ala Asp Phe Val Glu Tyr Glu Lys Asn Asn Pro Gly	
410 415 420 425	
agt caa aaa cga ttt cct agc aac tgt ggc cgt gat gga aaa ctg ttt	1466
Ser Gln Lys Arg Phe Pro Ser Asn Cys Gly Arg Asp Gly Lys Leu Phe	
426 431 436 441	
ctt tgg gga caa gca ctt tat atc atc gca aaa ctc ctg gct gat gaa	1514
Leu Trp Gly Gln Ala Leu Tyr Ile Ile Ala Lys Leu Leu Ala Asp Glu	
442 447 452 457	
ctt att agt cct aaa gac att gat cct gtc cag cgc tat gtc cca cta	1562
Leu Ile Ser Pro Lys Asp Ile Asp Pro Val Gln Arg Tyr Val Pro Leu	
458 463 468 473	
aag gat caa cgt aac gtg agc atg agg ttt tcc aat cag ggc cca ctg	1610
Lys Asp Gln Arg Asn Val Ser Met Arg Phe Ser Asn Gln Gly Pro Leu	
474 479 484 489	
gaa aat gac ttg gta gtt cat gtg gca ctt ata gca gaa agc caa aga	1658
Glu Asn Asp Leu Val Val His Val Ala Leu Ile Ala Glu Ser Gln Arg	
490 495 500 505	
ctt caa gtt ttt ctg aac aca tat ggt att caa act caa act cct caa	1706
Leu Gln Val Phe Leu Asn Thr Tyr Gly Ile Gln Thr Gln Thr Pro Gln	
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caa gta gaa ccc att cag ata tgg cct cag cag gag ctt gtg aaa gct	1754
Gln Val Glu Pro Ile Gln Ile Trp Pro Gln Gln Glu Leu Val Lys Ala	
522 527 532 537	
tat ttg cag ctg ggt atc aat gaa aag tta gga ctc tct gga agg cca	1802
Tyr Leu Gln Leu Gly Ile Asn Glu Lys Leu Gly Leu Ser Gly Arg Pro	
538 543 548 553	
gac agg ccc att ggc tgc ctc ggg aca tca aag att tat cgc att cta	1850
Asp Arg Pro Ile Gly Cys Leu Gly Thr Ser Lys Ile Tyr Arg Ile Leu	
554 559 564 569	
gga aag act gtg gtt tgt tac ccg att att ttc gac cta agt gat ttc	1898
Gly Lys Thr Val Val Cys Tyr Pro Ile Ile Phe Asp Leu Ser Asp Phe	
570 575 580 585	
tac atg tct cag gat gtt ttc ctg ctg ata gat gac ata aag aat gcg	1946
Tyr Met Ser Gln Asp Val Phe Leu Leu Ile Asp Asp Ile Lys Asn Ala	
586 591 596 601	
ctg cag ttc att aaa caa tat tgg aaa atg cat gga cgt cca ctt ttc	1994
Leu Gln Phe Ile Lys Gln Tyr Trp Lys Met His Gly Arg Pro Leu Phe	
602 607 612 617	
ctt gtt ctc atc cgg gaa gac aat ata aga ggt agc cgg ttc aac ccc	2042





842	847	852	857	
ggc tgg atc atc tcc aat aac cct gag tta ttc agt ggc acg ctg aaa				2762
Gly Trp Ile Ile Ser Asn Asn Pro Glu Leu Phe Ser Gly Thr Leu Lys				
858	863	868	873	
ata cga atc ggg tgg atc atc cat gcc atg gag tat gaa ctt cag atc				2810
Ile Arg Ile Gly Trp Ile Ile His Ala Met Glu Tyr Glu Leu Gln Ile				
874	879	884	889	
cgt ggc gga gac aag cca gcc ttg gac ttg tat cag ctg tca cct agt				2858
Arg Gly Gly Asp Lys Pro Ala Leu Asp Leu Tyr Gln Leu Ser Pro Ser				
890	895	900	905	
gaa gtt aaa cag ctt ctg ctg ggt ata ctg cag cct caa cag aat gga				2906
Glu Val Lys Gln Leu Leu Leu Gly Ile Leu Gln Pro Gln Gln Asn Gly				
906	911	916	921	
aga tgt tgg ctg aac agg cgt cag atc gat ggg tct ttg aat aga act				2954
Arg Cys Trp Leu Asn Arg Arg Gln Ile Asp Gly Ser Leu Asn Arg Thr				
922	927	932	937	
ccc acc ggg ttc tat gac cga gtg tgg cag att ctg gag cgc acg ccc				3002
Pro Thr Gly Phe Tyr Asp Arg Val Trp Gln Ile Leu Glu Arg Thr Pro				
938	943	948	953	
aat ggg atc att gtt gct ggg aag cat ttg cct cag caa cca acc ctg				3050
Asn Gly Ile Ile Val Ala Gly Lys His Leu Pro Gln Gln Pro Thr Leu				
954	959	964	969	
tca gat atg acc atg tat gag atg aat ttc tct ctc ctt gtt gaa gac				3098
Ser Asp Met Thr Met Tyr Glu Met Asn Phe Ser Leu Leu Val Glu Asp				
970	975	980	985	
acg ttg gga aat att gac cag cca cag tac aga cag atc gtt gta gag				3146
Thr Leu Gly Asn Ile Asp Gln Pro Gln Tyr Arg Gln Ile Val Val Glu				
986	991	996	1001	
tta ctt atg gtt gta tcc att gta ctg gaa aga aac ccc gag cta gaa				3194
Leu Leu Met Val Val Ser Ile Val Leu Glu Arg Asn Pro Glu Leu Glu				
1002	1007	1012	1017	
ttt caa gac aaa gta gat cta gac aga ctg gtc aaa gaa gca ttt aat				3242
Phe Gln Asp Lys Val Asp Leu Asp Arg Leu Val Lys Glu Ala Phe Asn				
1018	1023	1028	1033	
gaa ttt caa aaa gat cag agt cgg cta aag gaa att gaa aaa caa gat				3290
Glu Phe Gln Lys Asp Gln Ser Arg Leu Lys Glu Ile Glu Lys Gln Asp				
1034	1039	1044	1049	
gac atg act tcc ttt tac aac act cct ccc ctg gga aaa aga gga aca				3338
Asp Met Thr Ser Phe Tyr Asn Thr Pro Pro Leu Gly Lys Arg Gly Thr				
1050	1055	1060	1065	
tgc agc tat ttg aca aag gcg gtg atg aat ctg ctg ctg gaa gga gaa				3386
Cys Ser Tyr Leu Thr Lys Ala Val Met Asn Leu Leu Leu Glu Gly Glu				
1066	1071	1076	1081	

gtc aag cca aac aat gat gac ccg tgt ctg att agc tag tggggaaggt	3435
Val Lys Pro Asn Asn Asp Asp Pro Cys Leu Ile Ser *	
1082 / 1087 1092	
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Ala Asn Pro Thr Val Phe Phe Asn Ile Ala Ile Asp Ser Glu Ser Leu	
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ggc tgc atc tcc ttc aag cta ttt gca gac aaa gtt cta aag atg gaa	693
Gly Cys Ile Ser Phe Lys Leu Phe Ala Asp Lys Val Leu Lys Met Glu	
18 23 28 33	
gaa aat ttt tgt gct ctg aac act gga gag aaa gta ttt ggt gat aaa	741
Glu Asn Phe Cys Ala Leu Asn Thr Gly Glu Lys Val Phe Gly Asp Lys	
34 39 44 49	
ggg ccc tgc ttt tac aga att att ccg ggg tgt tgt cag ggt ggt gac	789
Gly Pro Cys Phe Tyr Arg Ile Ile Pro Gly Cys Cys Gln Gly Gly Asp	
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ttc aca cac cat aat ggc act ggt ggc aag tcc ctc tac agc aag gaa	837
Phe Thr His His Asn Gly Thr Gly Gly Lys Ser Leu Tyr Ser Lys Glu	
66 71 76 81	
ttt gat gat gag aac ttc atc cta aag cat aca gct cct ggc gtc ttg	885
Phe Asp Asp Glu Asn Phe Ile Leu Lys His Thr Ala Pro Gly Val Leu	
82 87 92 97	
tcc acg gca aat gct gga ccc acc aca aat ggt tcc cag ttt ttc atc	933
Ser Thr Ala Asn Ala Gly Pro Thr Thr Asn Gly Ser Gln Phe Phe Ile	
98 103 108 113	
tgt act gcc aag aca gag gat gga tgc cag cat gtg gtc ttt ggc aag	981
Cys Thr Ala Lys Thr Glu Asp Gly Cys Gln His Val Val Phe Gly Lys	
114 119 124 129	
gtg aaa gat ggc atg agt att gtg gaa gcc ctg gaa cgc tct ggg tcc	1029
Val Lys Asp Gly Met Ser Ile Val Glu Ala Leu Glu Arg Ser Gly Ser	
130 135 140 145	

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 Arg Asn Gly Lys Thr Ser Lys Lys Ile Thr Ala Ala Asn Cys Gly Gln  
 146 151 156 161

ctc taa taaatttgat tgttttatct gaaccaccag atcgttcctt ctatagotca 1133  
 Leu \*  
 162

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acagcaccocg gtaactgcga gtggagcgga ggaccocgag ggctgaggag agaggaggcg 180

gcggcttagc tgctacgggg tccggccggc gccctcccga ggggggctca ggaggaggaa 240

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 Met Pro Leu Pro Trp Ser Leu Ala Leu Pro Leu  
 1 5

ctg ctc tcc tgg gtg gca ggt ggt ttc ggg aac gcg gcc agt gca agg 338  
 Leu Leu Ser Trp Val Ala Gly Gly Phe Gly Asn Ala Ala Ser Ala Arg  
 12 17 22 27

cat cac ggg ttg tta gca tcg gca cgt cag cct ggg gtc tgt cac tat 386  
 His His Gly Leu Leu Ala Ser Ala Arg Gln Pro Gly Val Cys His Tyr  
 28 33 38 43

gga act aaa ctg gcc tgc tgc tac ggc tgg aga aga aac agc aag gga 434

Gly	Thr	Lys	Leu	Ala	Cys	Cys	Tyr	Gly	Trp	Arg	Arg	Asn	Ser	Lys	Gly	
44					49					54					59	
gtc	tgt	gaa	gct	aca	tgc	gaa	cct	gga	tgt	aag	ttt	ggt	gag	tgc	gtg	482
Val	Cys	Glu	Ala	Thr	Cys	Glu	Pro	Gly	Cys	Lys	Phe	Gly	Glu	Cys	Val	
60					65					70					75	
gga	cca	aac	aaa	tgc	aga	tgc	ttt	cca	gga	tac	acc	ggg	aaa	acc	tgc	530
Gly	Pro	Asn	Lys	Cys	Arg	Cys	Phe	Pro	Gly	Tyr	Thr	Gly	Lys	Thr	Cys	
76					81					86					91	
agt	caa	gat	gtg	aat	gag	tgt	gga	atg	aaa	ccc	cgg	cca	tgc	caa	cac	578
Ser	Gln	Asp	Val	Asn	Glu	Cys	Gly	Met	Lys	Pro	Arg	Pro	Cys	Gln	His	
92					97					102					107	
aga	tgt	gtg	aat	aca	cac	gga	agc	tac	aag	tgc	ttt	tgc	ctc	agt	ggc	626
Arg	Cys	Val	Asn	Thr	His	Gly	Ser	Tyr	Lys	Cys	Phe	Cys	Leu	Ser	Gly	
108					113					118					123	
cac	atg	ctc	atg	cca	gat	gct	acg	tgt	gtg	aac	tct	agg	aca	tgt	gcc	674
His	Met	Leu	Met	Pro	Asp	Ala	Thr	Cys	Val	Asn	Ser	Arg	Thr	Cys	Ala	
124					129					134					139	
atg	ata	aac	tgt	cag	tac	agc	tgt	gaa	gac	aca	gaa	gaa	ggg	cca	cag	722
Met	Ile	Asn	Cys	Gln	Tyr	Ser	Cys	Glu	Asp	Thr	Glu	Glu	Gly	Pro	Gln	
140					145					150					155	
tgc	ctg	tgt	cca	tcc	tca	gga	ctc	cgc	ctg	gcc	cca	aat	gga	aga	gac	770
Cys	Leu	Cys	Pro	Ser	Ser	Gly	Leu	Arg	Leu	Ala	Pro	Asn	Gly	Arg	Asp	
156					161					166					171	
tgt	cta	gat	att	gat	gaa	tgt	gcc	tct	ggt	aaa	gtc	atc	tgt	ccc	tac	818
Cys	Leu	Asp	Ile	Asp	Glu	Cys	Ala	Ser	Gly	Lys	Val	Ile	Cys	Pro	Tyr	
172					177					182					187	
aat	cga	aga	tgt	gtg	aac	aca	ttt	gga	agc	tac	tac	tgc	aaa	tgt	cac	866
Asn	Arg	Arg	Cys	Val	Asn	Thr	Phe	Gly	Ser	Tyr	Tyr	Cys	Lys	Cys	His	
188					193					198					203	
att	ggt	ttc	gaa	ctg	caa	tat	atc	agt	gga	cga	tat	gac	tgt	ata	gat	914
Ile	Gly	Phe	Glu	Leu	Gln	Tyr	Ile	Ser	Gly	Arg	Tyr	Asp	Cys	Ile	Asp	
204					209					214					219	
ata	aat	gaa	tgt	act	atg	gat	agc	cat	acg	tgc	agc	cac	cat	gcc	aat	962
Ile	Asn	Glu	Cys	Thr	Met	Asp	Ser	His	Thr	Cys	Ser	His	His	Ala	Asn	
220					225					230					235	
tgc	ttc	aat	acc	caa	ggg	tcc	ttc	aag	tgt	aaa	tgc	aag	cag	gga	tat	1010
Cys	Phe	Asn	Thr	Gln	Gly	Ser	Phe	Lys	Cys	Lys	Cys	Lys	Gln	Gly	Tyr	
236					241					246					251	
aaa	ggc	aat	gga	ctt	cgg	tgt	tct	gct	atc	cct	gaa	aat	tct	gtg	aag	1058
Lys	Gly	Asn	Gly	Leu	Arg	Cys	Ser	Ala	Ile	Pro	Glu	Asn	Ser	Val	Lys	
252					257					262					267	
gaa	gtc	ctc	aga	gca	cct	ggt	acc	atc	aaa	gac	aga	atc	aag	aag	ttg	1106
Glu	Val	Leu	Arg	Ala	Pro	Gly	Thr	Ile	Lys	Asp	Arg	Ile	Lys	Lys	Leu	

268	273	278	283	
ctt gct cac aaa aac agc atg aaa aag aag gca aaa att aaa aat gtt				1154
Leu Ala His Lys Asn Ser Met Lys Lys Lys Ala Lys Ile Lys Asn Val				
284	289	294	299	
acc cca gaa ccc acc agg act cct acc cct aag gtg aac ttg cag ccc				1202
Thr Pro Glu Pro Thr Arg Thr Pro Thr Pro Lys Val Asn Leu Gln Pro				
300	305	310	315	
ttc aac tat gaa gag ata gtt tcc aga ggc ggg aac tct cat gga ggt				1250
Phe Asn Tyr Glu Glu Ile Val Ser Arg Gly Gly Asn Ser His Gly Gly				
316	321	326	331	
aaa aaa ggg aat gaa gag aaa atg aaa gag ggg ctt gag gat gag aaa				1298
Lys Lys Gly Asn Glu Glu Lys Met Lys Glu Gly Leu Glu Asp Glu Lys				
332	337	342	347	
aga gaa gag aaa gcc ctg aag aat gac ata gag gag cga agc ctg cga				1346
Arg Glu Glu Lys Ala Leu Lys Asn Asp Ile Glu Glu Arg Ser Leu Arg				
348	353	358	363	
gga gat gtg ttt ttc cct aag gtg aat gaa gca ggt gaa ttc ggc ctg				1394
Gly Asp Val Phe Phe Pro Lys Val Asn Glu Ala Gly Glu Phe Gly Leu				
364	369	374	379	
att ctg gtc caa agg aaa gcg cta act tcc aaa ctg gaa cat aaa gca				1442
Ile Leu Val Gln Arg Lys Ala Leu Thr Ser Lys Leu Glu His Lys Ala				
380	385	390	395	
gat tta aat atc tcg gtt gac tgc agc ttc aat cat ggg atc tgt gac				1490
Asp Leu Asn Ile Ser Val Asp Cys Ser Phe Asn His Gly Ile Cys Asp				
396	401	406	411	
tgg aaa cag gat aga gaa gat gat ttt gac tgg aat cct gct gat cga				1538
Trp Lys Gln Asp Arg Glu Asp Asp Phe Asp Trp Asn Pro Ala Asp Arg				
412	417	422	427	
gat aat gct att ggc ttc tat atg gca gtt ccg gcc ttg gca ggt cac				1586
Asp Asn Ala Ile Gly Phe Tyr Met Ala Val Pro Ala Leu Ala Gly His				
428	433	438	443	
aag aaa gac att ggc cga ttg aaa ctt ctc cta cct gac ctg caa ccc				1634
Lys Lys Asp Ile Gly Arg Leu Lys Leu Leu Leu Pro Asp Leu Gln Pro				
444	449	454	459	
caa agc aac ttc tgt ttg ctc ttt gat tac cgg ctg gcc gga gac aaa				1682
Gln Ser Asn Phe Cys Leu Leu Phe Asp Tyr Arg Leu Ala Gly Asp Lys				
460	465	470	475	
gtc ggg aaa ctt cga gtg ttt gtg aaa aac agt aac aat gcc ctg gca				1730
Val Gly Lys Leu Arg Val Phe Val Lys Asn Ser Asn Asn Ala Leu Ala				
476	481	486	491	
tgg gag aag acc acg agt gag gat gaa aag tgg aag aca ggg aaa att				1778
Trp Glu Lys Thr Thr Ser Glu Asp Glu Lys Trp Lys Thr Gly Lys Ile				
492	497	502	507	



Ala Lys Arg Tyr His Met Asp Ala Ser Gly Glu Ala Val Ser Glu Thr	
19 24 29 34	
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Leu Gln Phe Lys Ala Gln Asp Leu Leu Arg Ala Val Pro Arg Ser Arg	
35 40 45 50	
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Ala Glu Met Tyr Asp Asp Val His Ser Asp Gly Arg Tyr Ser Leu Ser	
51 56 61 66	
gga tct gta gct cac tct aga gat gcc gga aga gaa ggc ctg aga agt	415
Gly Ser Val Ala His Ser Arg Asp Ala Gly Arg Glu Gly Leu Arg Ser	
67 72 77 82	
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Asp Val Phe Pro Gly Pro Ser Phe Arg Ser Ser Asn Pro Ser Ile Ser	
83 88 93 98	
gat gac agc tac ttt cgc aaa gaa tgt ggc cgg gat ctg gaa ttt tct	511
Asp Asp Ser Tyr Phe Arg Lys Glu Cys Gly Arg Asp Leu Glu Phe Ser	
99 104 109 114	
cac tct gat tct cgg gac cag gtc att ggc cac cgg aaa ttg ggg cat	559
His Ser Asp Ser Arg Asp Gln Val Ile Gly His Arg Lys Leu Gly His	
115 120 125 130	
ttc cgt tct cag gac tgg aaa ttt gcg ctc cgt ggt tct tgg gaa caa	607
Phe Arg Ser Gln Asp Trp Lys Phe Ala Leu Arg Gly Ser Trp Glu Gln	
131 136 141 146	
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Asp Phe Gly His Pro Val Ser Gln Glu Ser Ser Trp Ser Gln Glu Tyr	
147 152 157 162	
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Ser Phe Gly Pro Ser Ala Val Leu Gly Asp Phe Gly Ser Ser Arg Leu	
163 168 173 178	
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Ile Glu Lys Glu Cys Leu Glu Lys Glu Ser Arg Asp Tyr Asp Val Asp	
179 184 189 194	
cat cct ggg gag gct gac tct gtg ctt agg ggc agc agt caa gtc cag	799
His Pro Gly Glu Ala Asp Ser Val Leu Arg Gly Ser Ser Gln Val Gln	
195 200 205 210	
gcc aga ggt cga gct cta aac atc gtt gac cag gaa ggt tcc ctc cta	847
Ala Arg Gly Arg Ala Leu Asn Ile Val Asp Gln Glu Gly Ser Leu Leu	
211 216 221 226	
gga aag ggg gag act cag ggc ctg ctc aca gct aag ggg ggt gtt ggg	895
Gly Lys Gly Glu Thr Gln Gly Leu Leu Thr Ala Lys Gly Gly Val Gly	
227 232 237 242	
aaa ctt gtc aca ttg aga aat gtg agc aca aaa aaa ata ccc acc gtg	943
Lys Leu Val Thr Leu Arg Asn Val Ser Thr Lys Lys Ile Pro Thr Val	



243	248	253	258	
aat cgt att act ccc aaa act cag ggc act aac caa atc cag aaa aac				991
Asn Arg Ile Thr Pro Lys Thr Gln Gly Thr Asn Gln Ile Gln Lys Asn				
259	264	269	274	
act cca agt cct gat gtg acc ctg ggg aca aac cca ggg aca gaa gat				1039
Thr Pro Ser Pro Asp Val Thr Leu Gly Thr Asn Pro Gly Thr Glu Asp				
275	280	285	290	
atc cag ttc ccc att cag aag atc cct ctg ggg ctg gat ctg aag aat				1087
Ile Gln Phe Pro Ile Gln Lys Ile Pro Leu Gly Leu Asp Leu Lys Asn				
291	296	301	306	
ctt cgg ctc ccc aga aga aag atg agc ttt gac atc ata gat aag tct				1135
Leu Arg Leu Pro Arg Arg Lys Met Ser Phe Asp Ile Ile Asp Lys Ser				
307	312	317	322	
gat gtt ttt tca aga ttt ggg ata gaa ata atc aaa tgg gca gga ttc				1183
Asp Val Phe Ser Arg Phe Gly Ile Glu Ile Ile Lys Trp Ala Gly Phe				
323	328	333	338	
cac acc ata aaa gat gat att aaa ttt tcc caa ctt ttc cag act ctc				1231
His Thr Ile Lys Asp Asp Ile Lys Phe Ser Gln Leu Phe Gln Thr Leu				
339	344	349	354	
ttt gaa ctt gaa aca gaa acc tgt gct aaa atg ctt gcc tca ttc aaa				1279
Phe Glu Leu Glu Thr Glu Thr Cys Ala Lys Met Leu Ala Ser Phe Lys				
355	360	365	370	
tgt tcc tta aaa cca gag cac aga gat ttt tgc ttt ttt act atc aaa				1327
Cys Ser Leu Lys Pro Glu His Arg Asp Phe Cys Phe Phe Thr Ile Lys				
371	376	381	386	
ttt tta aag cac tct gct ttg aaa aca ccc aga gtt gat aat gag ttt				1375
Phe Leu Lys His Ser Ala Leu Lys Thr Pro Arg Val Asp Asn Glu Phe				
387	392	397	402	
tta aac atg ctt tta gac aaa ggt gct gtg aag acc aaa aat tgc ttt				1423
Leu Asn Met Leu Leu Asp Lys Gly Ala Val Lys Thr Lys Asn Cys Phe				
403	408	413	418	
ttt gaa atc ata aag cct ttt gac aag tac ata atg aga ctt caa gac				1471
Phe Glu Ile Ile Lys Pro Phe Asp Lys Tyr Ile Met Arg Leu Gln Asp				
419	424	429	434	
cgg ctt ctg aag agt gtc aca cct ttg ctt atg gcc tgc aat gcc tac				1519
Arg Leu Leu Lys Ser Val Thr Pro Leu Leu Met Ala Cys Asn Ala Tyr				
435	440	445	450	
gag cta agt gtc aag atg aag acc ctc agt aac ccc ctg gac ttg gct				1567
Glu Leu Ser Val Lys Met Lys Thr Leu Ser Asn Pro Leu Asp Leu Ala				
451	456	461	466	
ctt gcc cta gaa acc acc aac tct ctc tgc cgg aag tct ttg gcc ctt				1615
Leu Ala Leu Glu Thr Thr Asn Ser Leu Cys Arg Lys Ser Leu Ala Leu				
467	472	477	482	

ttg gga cag aca ttt tcc ttg gcc tct tct ttc cgg cag gag aaa atc	1663
Leu Gly Gln Thr Phe Ser Leu Ala Ser Ser Phe Arg Gln Glu Lys Ile	
483 488 493 498	
tta gaa gct gtc ggc ctg caa gat ata gct ccc tca cct gct gcg ttt	1711
Leu Glu Ala Val Gly Leu Gln Asp Ile Ala Pro Ser Pro Ala Ala Phe	
499 504 509 514	
cca aac ttc gaa gac tcc act ttg ttt ggg cga gag tac ata gac cac	1759
Pro Asn Phe Glu Asp Ser Thr Leu Phe Gly Arg Glu Tyr Ile Asp His	
515 520 525 530	
ctg aag gcc tgg cta gtc agc agc gga tgt ccc ctg cag gtt aag aaa	1807
Leu Lys Ala Trp Leu Val Ser Ser Gly Cys Pro Leu Gln Val Lys Lys	
531 536 541 546	
gcc gaa cca gag ccg atg cga gag gag gag aaa atg att cct cct acg	1855
Ala Glu Pro Glu Pro Met Arg Glu Glu Glu Lys Met Ile Pro Pro Thr	
547 552 557 562	
aaa cct gaa att cag gcc aag gct cca agt agt ctg agt gat gct gtc	1903
Lys Pro Glu Ile Gln Ala Lys Ala Pro Ser Ser Leu Ser Asp Ala Val	
563 568 573 578	
ccc cag cga gca gat cac agg gta gtg ggc acc atc gac cag ctt gtg	1951
Pro Gln Arg Ala Asp His Arg Val Val Gly Thr Ile Asp Gln Leu Val	
579 584 589 594	
aaa cgt gtc atc gaa ggc agc ctg tct ccc aaa gag aga act ctt ctc	1999
Lys Arg Val Ile Glu Gly Ser Leu Ser Pro Lys Glu Arg Thr Leu Leu	
595 600 605 610	
aaa gag gac cct gct tac tgg ttt ttg tot gat gaa aat agt ctg gag	2047
Lys Glu Asp Pro Ala Tyr Trp Phe Leu Ser Asp Glu Asn Ser Leu Glu	
611 616 621 626	
tat aaa tat tac aag ctg aag ttg gca gaa atg cag cgg atg agc gag	2095
Tyr Lys Tyr Tyr Lys Leu Lys Leu Ala Glu Met Gln Arg Met Ser Glu	
627 632 637 642	
aac ttg cga gga gcc gac cag aag ccg acc tca gca gac tgt gca gtg	2143
Asn Leu Arg Gly Ala Asp Gln Lys Pro Thr Ser Ala Asp Cys Ala Val	
643 648 653 658	
agg gcc atg ctg tac tcc cgg gct gtc cgc aac ctc aag aag aaa ctc	2191
Arg Ala Met Leu Tyr Ser Arg Ala Val Arg Asn Leu Lys Lys Lys Leu	
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Leu Pro Trp Gln Arg Arg Gly Leu Leu Arg Ala Gln Gly Leu Arg Gly	
675 680 685 690	
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Trp Lys Ala Arg Arg Ala Thr Thr Gly Thr Gln Thr Leu Leu Ser Ser	
691 696 701 706	

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Gly Thr Arg Leu Lys His His Gly Arg Gln Ala Pro Gly Leu Ser Gln	
707 712 717 722	
gca aaa cca tcc ctg cca gac aga aat gat gct gcc aag gac tgc ccg	2383
Ala Lys Pro Ser Leu Pro Asp Arg Asn Asp Ala Ala Lys Asp Cys Pro	
723 728 733 738	
cca gac cca gtt gga cct tct cct cag gac ccc agc tta gaa gcc tca	2431
Pro Asp Pro Val Gly Pro Ser Pro Gln Asp Pro Ser Leu Glu Ala Ser	
739 744 749 754	
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Gly Pro Ser Pro Lys Pro Ala Gly Val Asp Ile Ser Glu Ala Pro Gln	
755 760 765 770	
acc tct tct ccc tgc cca tct gct gac att gac atg aag aca atg gag	2527
Thr Ser Ser Pro Cys Pro Ser Ala Asp Ile Asp Met Lys Thr Met Glu	
771 776 781 786	
act gca gag aaa ctg gct aga ttt gtt gct cag gtg gga cca gag atc	2575
Thr Ala Glu Lys Leu Ala Arg Phe Val Ala Gln Val Gly Pro Glu Ile	
787 792 797 802	
gaa caa ttc agc ata gaa aac agc acc gat aac cct gac ctg tgg ttt	2623
Glu Gln Phe Ser Ile Glu Asn Ser Thr Asp Asn Pro Asp Leu Trp Phe	
803 808 813 818	
cta cat gac caa aat agt tct gct ttc aaa ttc tat cga aag aaa gtg	2671
Leu His Asp Gln Asn Ser Ser Ala Phe Lys Phe Tyr Arg Lys Lys Val	
819 824 829 834	
ttt gaa cta tgt cca tca att tgt ttc acg tca tct ccg cac aac ctt	2719
Phe Glu Leu Cys Pro Ser Ile Cys Phe Thr Ser Ser Pro His Asn Leu	
835 840 845 850	
cac act ggt ggt ggt gac acc acg ggt tct cag gag agc ccc gtg gac	2767
His Thr Gly Gly Gly Asp Thr Thr Gly Ser Gln Glu Ser Pro Val Asp	
851 856 861 866	
ctc atg gaa ggg gaa gca gag ttt gaa gac gag ccc cct ccg cgg gag	2815
Leu Met Glu Gly Glu Ala Glu Phe Glu Asp Glu Pro Pro Pro Arg Glu	
867 872 877 882	
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Ala Glu Leu Glu Ser Pro Glu Val Met Pro Glu Glu Glu Asp Glu Asp	
883 888 893 898	
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Asp Glu Asp Gly Gly Glu Glu Ala Pro Ala Pro Gly Gly Ala Gly Lys	
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Ser Glu Gly Ser Thr Pro Ala Asp Gly Leu Pro Gly Glu Ala Ala Glu	
915 920 925 930	
gac gac ctg gct gga gca cct gcc ttg tca cag gcc tcc tca ggt acc	3007

Asp Asp Leu Ala Gly Ala Pro Ala Leu Ser Gln Ala Ser Ser Gly Thr	
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Cys Phe Pro Arg Lys Arg Ile Ser Ser Lys Ser Leu Lys Val Gly Met	
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att cca gct ccc aag aga gtg tgt ctc atc cag gag cca aaa gtc cat	3103
Ile Pro Ala Pro Lys Arg Val Cys Leu Ile Gln Glu Pro Lys Val His	
963 968 973 978	
gaa cca gtt cga att gcc tat gac agg cct cgg ggt cgt ccc atg tcc	3151
Glu Pro Val Arg Ile Ala Tyr Asp Arg Pro Arg Gly Arg Pro Met Ser	
979 984 989 994	
aaa aag aag aaa ccc aag gac ttg gac ttc gcc cag cag aag ctg acc	3199
Lys Lys Lys Lys Pro Lys Asp Leu Asp Phe Ala Gln Gln Lys Leu Thr	
995 1000 1005 1010	
gat aag aac ctg ggc ttc cag atg ctg cag aag atg ggc tgg aag gag	3247
Asp Lys Asn Leu Gly Phe Gln Met Leu Gln Lys Met Gly Trp Lys Glu	
1011 1016 1021 1026	
ggc cat ggc ctg ggc tcc ctc gga aag ggc atc agg gag ccg gtc agc	3295
Gly His Gly Leu Gly Ser Leu Gly Lys Gly Ile Arg Glu Pro Val Ser	
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Val Tyr Ala Ala Gly Ser Leu Gly Trp Glu Trp Val Gly Pro Gln Ser	
1043 1048 1053 1058	
ttc cac ctg cag cct gcc gct tgg ctc ctt cac agc caa gat ggc tta	3391
Phe His Leu Gln Pro Ala Ala Trp Leu Leu His Ser Gln Asp Gly Leu	
1059 1064 1069 1074	
cag ctg gca gtt gat ttt tgt ttt tta aac aga agg cat ctt cag atg	3439
Gln Leu Ala Val Asp Phe Cys Phe Leu Asn Arg Arg His Leu Gln Met	
1075 1080 1085 1090	
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Arg Ser *	
1091	
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acgggggttc agggaatatt tactgggctt ctccgctccc tctgctcttg gaggtgcc 178  
atg agg tca gtt agc tac gtg cag cgc gtg gcg ctg gag ttc agc ggg 226  
Met Arg Ser Val Ser Tyr Val Gln Arg Val Ala Leu Glu Phe Ser Gly  
1 5 10 15  
agc ctc ttc ccg cac gca atc tgc ctc gga gac gtt gat aac gat acg 274  
Ser Leu Phe Pro His Ala Ile Cys Leu Gly Asp Val Asp Asn Asp Thr  
17 22 27 32  
tta aat gaa ctg gtg gtg gga gac acc agc ggg aag gtg tct gtg tat 322  
Leu Asn Glu Leu Val Val Gly Asp Thr Ser Gly Lys Val Ser Val Tyr  
33 38 43 48  
aaa aat gat gac agt cgg cca tgg ctc acc tgt tcc tgc cag gga atg 370  
Lys Asn Asp Asp Ser Arg Pro Trp Leu Thr Cys Ser Cys Gln Gly Met  
49 54 59 64  
ctg act tgc gtt ggg gtt gga gac gtg tgt aat aaa gga aag aac ctg 418  
Leu Thr Cys Val Gly Val Gly Asp Val Cys Asn Lys Gly Lys Asn Leu  
65 70 75 80  
ttg gtg gca gtg agt gct gaa ggc tgg ttt cat ttg ttt gac ctg aca 466  
Leu Val Ala Val Ser Ala Glu Gly Trp Phe His Leu Phe Asp Leu Thr

81	86	91	96	
cct gcc aag gtg ttg gat gct tct ggg cac cac gag aca cta atc gga Pro Ala Lys Val Leu Asp Ala Ser Gly His His Glu Thr Leu Ile Gly 97 102 107 112				514
gag gag cag cgt cca gtc ttc aag cag cac atc cct gcc aac acc aag Glu Glu Gln Arg Pro Val Phe Lys Gln His Ile Pro Ala Asn Thr Lys 113 118 123 128				562
gtc atg ctg atc agc gac atc gat gga gat ggg tgt cgt gag ctg gtg Val Met Leu Ile Ser Asp Ile Asp Gly Asp Gly Cys Arg Glu Leu Val 129 134 139 144				610
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ggt gag ggt cct gaa cat ctg aca ggg cag ctg gtg tcc ctc aag aaa Gly Glu Gly Pro Glu His Leu Thr Gly Gln Leu Val Ser Leu Lys Lys 161 166 171 176				706
tgg atg ctg gag ggt cag gtg gac agc ctc tca gtg act ctg ggg cca Trp Met Leu Glu Gly Gln Val Asp Ser Leu Ser Val Thr Leu Gly Pro 177 182 187 192				754
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att cta ctg tgt acc tgg aaa aag gac act ggg tcc cct cct gcc tct Ile Leu Leu Cys Thr Trp Lys Lys Asp Thr Gly Ser Pro Pro Ala Ser 209 214 219 224				850
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gtg ctg cac cag aca tct ggc cgt atc cac aac aag aat gtc tcc act Val Leu His Gln Thr Ser Gly Arg Ile His Asn Lys Asn Val Ser Thr 241 246 251 256				946
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cac cag ctc ttt gcc ctg gag aaa ctg gat gtc acc ggc aac ggg cat His Gln Leu Phe Ala Leu Glu Lys Leu Asp Val Thr Gly Asn Gly His 305 310 315 320				1138

gag gag gta gtt gca tgc gcc tgg gat gga cag aca tat atc att gat	1186
Glu Glu Val Val Ala Cys Ala Trp Asp Gly Gln Thr Tyr Ile Ile Asp	
321 326 331 336	
cac aac cgc acc gtc gtc cgc ttc caa gtg gat gaa aat atc cgt gcc	1234
His Asn Arg Thr Val Val Arg Phe Gln Val Asp Glu Asn Ile Arg Ala	
337 342 347 352	
ttc tgt gca ggc ctg tac gcc tgc aaa gag ggc cgc aac agc ccc tgc	1282
Phe Cys Ala Gly Leu Tyr Ala Cys Lys Glu Gly Arg Asn Ser Pro Cys	
353 358 363 368	
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Leu Val Tyr Val Thr Phe Asn Gln Lys Ile Tyr Val Tyr Trp Glu Val	
369 374 379 384	
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Gln Leu Glu Arg Met Glu Ser Thr Asn Leu Val Lys Leu Leu Glu Thr	
385 390 395 400	
aag ccg gag tac cac agc ctg ctg cag gag ctg ggc gtg gat cct gac	1426
Lys Pro Glu Tyr His Ser Leu Leu Gln Glu Leu Gly Val Asp Pro Asp	
401 406 411 416	
gac ctc cct gtg act cgt gcc ctg ctt cac caa acg ctc tac cat cca	1474
Asp Leu Pro Val Thr Arg Ala Leu Leu His Gln Thr Leu Tyr His Pro	
417 422 427 432	
gac cag cca cca cag tgt gct ccc tca agc ctc cag gat ccc acc tag	1522
Asp Gln Pro Pro Gln Cys Ala Pro Ser Ser Leu Gln Asp Pro Thr *	
433 438 443 448	
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catctgcaag ccaaggaaca cctaagagga ccagcaaacc accagaagcc aggggagagg	1762
cgtggaacag accctgcctt acagctgtca gaaggaacca accctgcca caccttcctg	1822
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Met Glu Pro Gln Glu Glu Arg Glu Thr Gln	
1 5	
gtt gct gcg tgg tta aaa aaa ata ttt gga gat cat cct att cca cag	159
Val Ala Ala Trp Leu Lys Lys Ile Phe Gly Asp His Pro Ile Pro Gln	
11 16 21 26	
tat gag gtg aac cca cgg acc aca gag att tta cat cac ctt tca gaa	207
Tyr Glu Val Asn Pro Arg Thr Thr Glu Ile Leu His His Leu Ser Glu	
27 32 37 42	
cgc aac agg gtc cgg gac agg gat gtc tac ctg gta ata gag gac ttg	255
Arg Asn Arg Val Arg Asp Arg Asp Val Tyr Leu Val Ile Glu Asp Leu	
43 48 53 58	
aag cag aaa gca agt gaa tac gag tca gaa gcc aag tat ctt caa gac	303
Lys Gln Lys Ala Ser Glu Tyr Glu Ser Glu Ala Lys Tyr Leu Gln Asp	
59 64 69 74	
ctt ctc atg gag agt gtg aat ttt tcc ccc gcc aat ctc tct agc act	351
Leu Leu Met Glu Ser Val Asn Phe Ser Pro Ala Asn Leu Ser Ser Thr	
75 80 85 90	
ggt tcc agg tat ctg aat gct ttg gtt gac agt gcg gtg gcc ctt gaa	399
Gly Ser Arg Tyr Leu Asn Ala Leu Val Asp Ser Ala Val Ala Leu Glu	
91 96 101 106	
aca aag gat acc tcg cta gct agt ttt atc cct gca gtg aat gat ttg	447
Thr Lys Asp Thr Ser Leu Ala Ser Phe Ile Pro Ala Val Asn Asp Leu	
107 112 117 122	
acc tct gat ctc ttt cgt acc aaa tcc aaa agt gaa gaa atc aag att	495
Thr Ser Asp Leu Phe Arg Thr Lys Ser Lys Ser Glu Glu Ile Lys Ile	
123 128 133 138	
gaa ctg gaa aaa ctt gaa aaa aat tta act gca act tta gta tta gaa	543
Glu Leu Glu Lys Leu Glu Lys Asn Leu Thr Ala Thr Leu Val Leu Glu	
139 144 149 154	
aaa tgt cta caa gag gat gtc aag aaa gca gag ttg cat ctg tct aca	591
Lys Cys Leu Gln Glu Asp Val Lys Lys Ala Glu Leu His Leu Ser Thr	
155 160 165 170	
gaa agg gcc aaa gtt gat aat cgt cgt cag aac atg gac ttt cta aaa	639
Glu Arg Ala Lys Val Asp Asn Arg Arg Gln Asn Met Asp Phe Leu Lys	
171 176 181 186	
gca aag tca gag gaa ttc aga ttt gga atc aag gct gca gag gag caa	687
Ala Lys Ser Glu Glu Phe Arg Phe Gly Ile Lys Ala Ala Glu Glu Gln	
187 192 197 202	

ctt tca gcc aga ggc atg gat gct tct ctg tct cat cag tcc tta gta 735  
 Leu Ser Ala Arg Gly Met Asp Ala Ser Leu Ser His Gln Ser Leu Val  
 203 208 213 218

gca cta tca gag aaa ctg gca aga tta aag caa cag act ata cct ttg 783  
 Ala Leu Ser Glu Lys Leu Ala Arg Leu Lys Gln Gln Thr Ile Pro Leu  
 219 224 229 234

aag aaa aaa ttg gag tcc tat tta gac tta atg ccg aat ccg tct ctt 831  
 Lys Lys Lys Leu Glu Ser Tyr Leu Asp Leu Met Pro Asn Pro Ser Leu  
 235 240 245 250

gct caa gtg aaa att gaa gaa gca aag cga gaa cta gat agc att gaa 879  
 Ala Gln Val Lys Ile Glu Glu Ala Lys Arg Glu Leu Asp Ser Ile Glu  
 251 256 261 266

gct gaa ctt aca aga aga gta gac atg atg gaa ctg tga caaaagccaa 928  
 Ala Glu Leu Thr Arg Arg Val Asp Met Met Glu Leu \*  
 267 272 277

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 Met Ala Ala Ser  
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 5 10 15 20

gcg ggt ggt aac agc aca cga gag cgg ctg ctg tct gcg ctt gag gac 210  
 Ala Gly Gly Asn Ser Thr Arg Glu Arg Leu Leu Ser Ala Leu Glu Asp  
 21 26 31 36

ttg gag gtc ctg tct agg gaa ctt ata gaa atg ctg gca att tca aga 258  
 Leu Glu Val Leu Ser Arg Glu Leu Ile Glu Met Leu Ala Ile Ser Arg

37	42	47	52	
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Asn Gln Lys Leu Leu Gln Ala Gly Glu Glu Asn Gln Val Leu Glu Leu				
53	58	63	68	
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Leu Ile His Arg Asp Gly Glu Phe Gln Glu Leu Met Lys Leu Ala Leu				
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Asn Gln Gly Lys Ile His His Glu Met Gln Val Leu Glu Lys Glu Val				
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Glu Lys Arg Asp Ser Asp Ile Gln Gln Leu Gln Lys Gln Leu Lys Glu				
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Ala Glu Gln Ile Leu Ala Thr Ala Val Tyr Gln Ala Lys Glu Lys Leu				
117	122	127	132	
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Lys Ser Ile Glu Lys Ala Arg Lys Gly Ala Ile Ser Ser Glu Glu Ile				
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Ile Lys Tyr Ala His Arg Ile Ser Ala Ser Asn Ala Val Cys Ala Pro				
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Gly Val Asn Gly His Leu Pro Gly Asp Ala Leu Ala Ala Gly Arg Leu				
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Pro Asp Val Leu Ala Pro Gln Tyr Pro Trp Gln Ser Asn Asp Met Ser				
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Pro Gly His Asn Lys Glu Asn Glu Asp Asp Val Glu Ile Met Ser Thr				
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Asp Ser Ser Ser Ser Ser Ser Ser Glu Ser Asp *				
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Pro Glu Pro Glu Gln Asp Tyr Asp Glu Ala Leu Gly Arg Leu Glu Pro	
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Pro Arg Arg Arg Gly Ser Gly Pro Arg Arg Val Leu Asp Val Glu Val	
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Tyr Ser Ser Arg Ser Lys Val Tyr Val Ala Val Asp Gly Thr Thr Val	
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ccc aat tac ctg tac agg atg ctg cgc tct ctg ctt tca gcc cag ggg	1133
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Ser Asn Leu Ser Gly Leu Val Pro Ala Ala Gly Leu Val Pro Ala Leu
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cca cct gct gtg acc ctg ggg ctg aca gct gcc tac acc acc ctg tat      153
Pro Pro Ala Val Thr Leu Gly Leu Thr Ala Ala Tyr Thr Thr Leu Tyr
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gcc ctg ctc ttc ttc tcc gtc tat gcc cag ctc tgg ctg gtg ctt ctg      201
Ala Leu Leu Phe Phe Ser Val Tyr Ala Gln Leu Trp Leu Val Leu Leu
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tat ggg cac aag cgt ctc agc tat cag acg gtg ttc ctg gcc ctc tgt      249
Tyr Gly His Lys Arg Leu Ser Tyr Gln Thr Val Phe Leu Ala Leu Cys
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ctg ctc tgg gcc gcc ttg cgt acc acc ctc ttc tcc ttc tac ttc cga      297
Leu Leu Trp Ala Ala Leu Arg Thr Thr Leu Phe Ser Phe Tyr Phe Arg
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gat act ccc cgc gcc aac cgc ctg ggg ccc ttg ccc ttc tgg ctt ctc      345
Asp Thr Pro Arg Ala Asn Arg Leu Gly Pro Leu Pro Phe Trp Leu Leu
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tac tgc tgc ccc gtc tgc ctg cag ttc ttc acc ttg acg ctt atg aac      393
Tyr Cys Cys Pro Val Cys Leu Gln Phe Phe Thr Leu Thr Leu Met Asn
  99                               104                               109                               114

ctc tac ttt gcc cag gtg gtg ttc aag gcc aag gtg aag cgt cgg ccg      441
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Glu Met Ser Arg Gly Leu Leu Ala Val Arg Gly Ala Phe Val Gly Ala
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tcg ctg ctc ttt ctg ctg gtg aac gtg ctg tgt gct gtg ctc tcc cat      537
Ser Leu Leu Phe Leu Leu Val Asn Val Leu Cys Ala Val Leu Ser His
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cgg cgc cgg gca cag ccc tgg gcc ctg ctg ctt gtc cgc gtc ctg gtg      585
Arg Arg Arg Ala Gln Pro Trp Ala Leu Leu Leu Val Arg Val Leu Val
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Ser Asp Ser Leu Phe Val Ile Cys Ala Leu Ser Leu Ala Ala Cys Leu	
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Cys Leu Val Ala Arg Arg Ala Pro Ser Thr Ser Ile Tyr Leu Glu Ala	
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Lys Gly Thr Ser Val Cys Gln Ala Ala Ala Met Gly Gly Ala Met Val	
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Leu Leu Tyr Ala Ser Arg Ala Cys Tyr Asn Leu Thr Ala Leu Ala Leu	
227 232 237 242	
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Ala Pro Gln Ser Arg Leu Asp Thr Phe Asp Tyr Asp Trp Tyr Asn Val	
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Ser Asp Gln Ala Asp Leu Val Asn Asp Leu Gly Asn Lys Gly Tyr Leu	
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Val Phe Gly Leu Ile Leu Phe Val Trp Glu Leu Leu Pro Thr Thr Leu	
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ccg ccg gag aag gag cag cca ctg ctg cct cca ccg ccc tgt cca gcg				2601
Pro Pro Glu Lys Glu Gln Pro Leu Leu Pro Pro Pro Pro Cys Pro Ala				
835	840	845	850	
cag ccg ctg ggc agg ccc cga tcc cct tgc ccc ccc gag aag gct cag				2649
Gln Pro Leu Gly Arg Pro Arg Ser Pro Ser Pro Pro Glu Lys Ala Gln				
851	856	861	866	

ccg cct tcc ccg ccc acg gcc tcg gcc ctg gat tat ccc agc gag aac	2697
Pro Pro Ser Pro Pro Thr Ala Ser Ala Leu Asp Tyr Pro Ser Glu Asn	
867 872 877 882	
ctg gcc ttc atc gac gag tcc tcg gat acg cag agc gag cgc ggc tgc	2745
Leu Ala Phe Ile Asp Glu Ser Ser Asp Thr Gln Ser Glu Arg Gly Cys	
883 888 893 898	
ccg ctg ccc cgc gcg ccg aga ggt cgc cgc cgc cca aat ccc ccc agg	2793
Pro Leu Pro Arg Ala Pro Arg Gly Arg Arg Arg Pro Asn Pro Pro Arg	
899 904 909 914	
aag ccc gtg cgg ccc cgc ggc ccc ggg cgt ccc cga gac aaa ggc gtg	2841
Lys Pro Val Arg Pro Arg Gly Pro Gly Arg Pro Arg Asp Lys Gly Val	
915 920 925 930	
ccg acc ccc cca agg ctt tct gtg tcg ctg ccc cgg gcg ggt gta tcc	2889
Pro Thr Pro Pro Arg Leu Ser Val Ser Leu Pro Arg Ala Gly Val Ser	
931 936 941 946	
ctc aca gca cct cac gac tgt gcc tca aag cct gca tca ata aat gaa	2937
Leu Thr Ala Pro His Asp Cys Ala Ser Lys Pro Ala Ser Ile Asn Glu	
947 952 957 962	
aac ggt ctg cac cgc tgc ggg cgt gac gct ccc gga cgc gag tgg gtg	2985
Asn Gly Leu His Arg Cys Gly Arg Asp Ala Pro Gly Arg Glu Trp Val	
963 968 973 978	
tgg aat tgc ttt cct cgg gcc acc gtg ggg gca cct ctg gcc tcc cgt	3033
Trp Asn Cys Phe Pro Arg Ala Thr Val Gly Ala Pro Leu Ala Ser Arg	
979 984 989 994	
gac ccc cag gcc gag ggt ccc cgg gca ccc agc ctt ggc tgc ccg cag	3081
Asp Pro Gln Ala Glu Gly Pro Arg Ala Pro Ser Leu Gly Cys Pro Gln	
995 1000 1005 1010	
ccc cca ccc aac ccc acg ttc tac ggg atc ccc aac ccg gcc cgg ctc	3129
Pro Pro Pro Asn Pro Thr Phe Tyr Gly Ile Pro Asn Pro Ala Arg Leu	
1011 1016 1021 1026	
agt tcc cca gcc cgc tct tcc ttc ccg ctc cag cca tcc gcg acc ctt	3177
Ser Ser Pro Ala Arg Ser Ser Phe Pro Leu Gln Pro Ser Ala Thr Leu	
1027 1032 1037 1042	
ggc tcc ctc ctt gta tgt ggc cca cag gtg tcg ctc aag tct tcc gac	3225
Gly Ser Leu Leu Val Cys Gly Pro Gln Val Ser Leu Lys Ser Ser Asp	
1043 1048 1053 1058	
cgc caa ggc tcg gac gag gag agc gtg cat agc gac act cgg gac ctg	3273
Arg Gln Gly Ser Asp Glu Glu Ser Val His Ser Asp Thr Arg Asp Leu	
1059 1064 1069 1074	
tgg acc acg acc acg ctg tcc cag gca cag ctg aac atg ccg ctg tcc	3321
Trp Thr Thr Thr Thr Ser Gln Ala Gln Leu Asn Met Pro Leu Ser	
1075 1080 1085 1090	

gag gtc tgc gag ggc ttc gac gat gag ggc cgc aac att agc aag acc	3369
Glu Val Cys Glu Gly Phe Asp Asp Glu Gly Arg Asn Ile Ser Lys Thr	
1091 1096 1101 1106	
cgc ggg tgg cac agc ccg ggg cgg ggc tgc ttg gac gag ggg tac aag	3417
Arg Gly Trp His Ser Pro Gly Arg Gly Ser Leu Asp Glu Gly Tyr Lys	
1107 1112 1117 1122	
gcc agc cac aag ccg gag gaa ctg gac gag cac gcg ctg gtg gag ctg	3465
Ala Ser His Lys Pro Glu Glu Leu Asp Glu His Ala Leu Val Glu Leu	
1123 1128 1133 1138	
gag ttg cac cgc ggc agc tcc atg gaa atc aat ctg ggg gag aag gac	3513
Glu Leu His Arg Gly Ser Ser Met Glu Ile Asn Leu Gly Glu Lys Asp	
1139 1144 1149 1154	
act gca tcc cag atc gag gcc gaa aag tct tcc tca atg tca tca ctc	3561
Thr Ala Ser Gln Ile Glu Ala Glu Lys Ser Ser Ser Met Ser Ser Leu	
1155 1160 1165 1170	
aat att gcg aag cac atg ccc cat cga gcc tac tgg gca gag cag cag	3609
Asn Ile Ala Lys His Met Pro His Arg Ala Tyr Trp Ala Glu Gln Gln	
1171 1176 1181 1186	
agc agg gtt gga ggg gct ggg gag act ggg cgt ttc ggt ggg ctg cca	3657
Ser Arg Val Gly Gly Ala Gly Glu Thr Gly Arg Phe Gly Gly Leu Pro	
1187 1192 1197 1202	
ctg ccc ctg atg gaa ctc atg gag aat gaa gct ctg gaa atc ctc acc	3705
Leu Pro Leu Met Glu Leu Met Glu Asn Glu Ala Leu Glu Ile Leu Thr	
1203 1208 1213 1218	
aaa gcc ctc cgg agt aag ctc ccc gcc aac ccc caa gaa ctc cca cga	3753
Lys Ala Leu Arg Ser Lys Leu Pro Ala Asn Pro Gln Glu Leu Pro Arg	
1219 1224 1229 1234	
cag att ctg gtg gat ttt gca ggg ctg ggg ccc agg ggg aga tgc aaa	3801
Gln Ile Leu Val Asp Phe Ala Gly Leu Gly Pro Arg Gly Arg Cys Lys	
1235 1240 1245 1250	
gtt ccc cag gct aac aca gac ctg agt gcc ctg cgc tac tgc tac ctc	3849
Val Pro Gln Ala Asn Thr Asp Leu Ser Ala Leu Arg Tyr Cys Tyr Leu	
1251 1256 1261 1266	
gaa tca tct gcg gtt cct cga atc aca cat gcg gcg ccc cct ggc tac	3897
Glu Ser Ser Ala Val Pro Arg Ile Thr His Ala Ala Pro Pro Gly Tyr	
1267 1272 1277 1282	
cag tta ggg atc ggc agg gac cac ttc ctg act aag gag ctg cag cga	3945
Gln Leu Gly Ile Gly Arg Asp His Phe Leu Thr Lys Glu Leu Gln Arg	
1283 1288 1293 1298	
tac atc gaa ggg ctc aag aag cgc cgg agc aag agg ctg tac gtg aat	3993
Tyr Ile Glu Gly Leu Lys Lys Arg Arg Ser Lys Arg Leu Tyr Val Asn	
1299 1304 1309 1314	
taa	3996

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1315

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<213> Homo sapiens

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<222> (171)..(920)

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ctcccacgct cctgccgctg tctcccacgt ccccaggtg cgcggccacc atg gcg 176  
Met Ala  
1  
tcc agc gac gag gac ggc acc aac ggc ggc gcc tcg gag gcc ggc gag 224  
Ser Ser Asp Glu Asp Gly Thr Asn Gly Gly Ala Ser Glu Ala Gly Glu  
3 8 13 18  
gac cgg gag gct ccc ggc aag cgg agg cgc ctg ggg ttc ttg gcc acc 272  
Asp Arg Glu Ala Pro Gly Lys Arg Arg Arg Leu Gly Phe Leu Ala Thr  
19 24 29 34  
gcc tgg ctc acc ttc tac gac atc gcc atg acc gcg ggg tgg ttg gtt 320  
Ala Trp Leu Thr Phe Tyr Asp Ile Ala Met Thr Ala Gly Trp Leu Val  
35 40 45 50  
cta gct att gcc atg gta cgt ttt tat atg gaa aaa gga aca cac aga 368  
Leu Ala Ile Ala Met Val Arg Phe Tyr Met Glu Lys Gly Thr His Arg  
51 56 61 66  
ggg tta tat aaa agt att cag aag aca ctt aaa ttt ttc cag aca ttt 416  
Gly Leu Tyr Lys Ser Ile Gln Lys Thr Leu Lys Phe Phe Gln Thr Phe  
67 72 77 82  
gcc ttg ctt gag ata gtt cac tgt tta att gga att gta cct act tct 464  
Ala Leu Leu Glu Ile Val His Cys Leu Ile Gly Ile Val Pro Thr Ser  
83 88 93 98  
gtg att gtg act ggg gtc caa gtg agt tca aga atc ttt atg gtg tgg 512  
Val Ile Val Thr Gly Val Gln Val Ser Ser Arg Ile Phe Met Val Trp  
99 104 109 114  
ctc att act cac agt ata aaa cca atc cag aat gaa gag agt gtg gtg 560  
Leu Ile Thr His Ser Ile Lys Pro Ile Gln Asn Glu Glu Ser Val Val  
115 120 125 130

ctt ttt ctg gtc gcg tgg act gtg aca gag atc act cgc tat tcc ttc	608
Leu Phe Leu Val Ala Trp Thr Val Thr Glu Ile Thr Arg Tyr Ser Phe	
131 136 141 146	
tac aca ttc agc ctt ctt gac cac ttg cca tac ttc att aaa tgg gcc	656
Tyr Thr Phe Ser Leu Leu Asp His Leu Pro Tyr Phe Ile Lys Trp Ala	
147 152 157 162	
aga tat aat ttt ttt atc atc tta tat cct gtt gga gtt gct ggt gaa	704
Arg Tyr Asn Phe Phe Ile Ile Leu Tyr Pro Val Gly Val Ala Gly Glu	
163 168 173 178	
ctt ctt aca ata tac gct gcc ttg ccg tat gtg aag aaa aca gga atg	752
Leu Leu Thr Ile Tyr Ala Ala Leu Pro Tyr Val Lys Lys Thr Gly Met	
179 184 189 194	
ttt tca ata aga ctt cct aac aaa tac aat gtc tct ttt gac tac tat	800
Phe Ser Ile Arg Leu Pro Asn Lys Tyr Asn Val Ser Phe Asp Tyr Tyr	
195 200 205 210	
tat ttt ctt ctt ata acc atg gca tca tat ata cct ttg ttt cca caa	848
Tyr Phe Leu Leu Ile Thr Met Ala Ser Tyr Ile Pro Leu Phe Pro Gln	
211 216 221 226	
ctc tat ttt cat atg tta cgt caa aga aga aag gtg ctt cat gga gag	896
Leu Tyr Phe His Met Leu Arg Gln Arg Arg Lys Val Leu His Gly Glu	
227 232 237 242	
gtg att gta gaa aag gat gat taa atgatctctg caaacaaggt gctttttcca	950
Val Ile Val Glu Lys Asp Asp *	
243 248	
gaataaccaa gattacctga gtccaagttt taataacaag aataaacaac tttgtgaaat	1010
atcatggatt gtatggtttc ttaaaatata acttgagaca cgtgggtatatt gccagtatatt	1070
gtgttcctct tgtgccagat ctatttttta caagaactgt gcaaatatca gtaacttttg	1130
ggtaggtatt gattattagg aaaataatta ggtgtattat ctgggggaaa aaaaaacttt	1190
tgotaaagttt tttttgaaac atgctcaaag ctttttaaata caatatttag aaattagttt	1250
aacgattttac tattatacct gctagtgata ttttatgtgat atttataaat gaaaataaat	1310
gcaaaattat aaaaaaaaaa aa	1332

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 <212> DNA  
 <213> Homo sapiens

<220>  
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 <222> (42)..(1031)

<400> 197

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	1	
ccg ggg tcg ggc ggc tgg gag gag gcc ccg cgc gca gct gcc gcg ctc		101
Pro Gly Ser Gly Gly Trp Glu Glu Ala Pro Arg Ala Ala Ala Ala Leu		
5 10 15 20		
tgc acc ctg tac cac gag gcc gga cag cgg ctg cgc cgc ctg cag gac		149
Cys Thr Leu Tyr His Glu Ala Gly Gln Arg Leu Arg Arg Leu Gln Asp		
21 26 31 36		
cag ctc gct gcc cgc gac gcc ctc atc gct cgc ctc cgc gcc cgc ctg		197
Gln Leu Ala Ala Arg Asp Ala Leu Ile Ala Arg Leu Arg Ala Arg Leu		
37 42 47 52		
gcc gcg ctg gag ggg gac gcc gcg ccg tcc cta gtg gac gcg ctg ctg		245
Ala Ala Leu Glu Gly Asp Ala Ala Pro Ser Leu Val Asp Ala Leu Leu		
53 58 63 68		
gag cag gtt gcg cgc ttc cgg gag cag ctg cga agg cag gag ggc ggc		293
Glu Gln Val Ala Arg Phe Arg Glu Gln Leu Arg Arg Gln Glu Gly Gly		
69 74 79 84		
gcc gcc gag gcc cag atg cgc cag gaa att gag agg ctg act gag cga		341
Ala Ala Glu Ala Gln Met Arg Gln Glu Ile Glu Arg Leu Thr Glu Arg		
85 90 95 100		
cta gaa gaa aaa gag agg gag atg cag cag ctg ctg agc cag ccc caa		389
Leu Glu Glu Lys Glu Arg Glu Met Gln Gln Leu Leu Ser Gln Pro Gln		
101 106 111 116		
cac gag cga gag aag gaa gtc gtc ctg cta cgg agg agc atg gca gaa		437
His Glu Arg Glu Lys Glu Val Val Leu Leu Arg Arg Ser Met Ala Glu		
117 122 127 132		
ggg gag cgc gcc cgg gcc gcc agt gac gtc ctg tgc cgc tcc ttg gcc		485
Gly Glu Arg Ala Arg Ala Ala Ser Asp Val Leu Cys Arg Ser Leu Ala		
133 138 143 148		
aac gag acc cat cag ctg cgg agg acg ctg acc gcc acc gcc cac atg		533
Asn Glu Thr His Gln Leu Arg Arg Thr Leu Thr Ala Thr Ala His Met		
149 154 159 164		
tgt cag cat ctg gcc aag tgt ctg gat gaa cga cag cat gca caa agg		581
Cys Gln His Leu Ala Lys Cys Leu Asp Glu Arg Gln His Ala Gln Arg		
165 170 175 180		
aat gtg ggg gag aga agt cct gac cag tcg gaa cac aca gat ggg cac		629
Asn Val Gly Glu Arg Ser Pro Asp Gln Ser Glu His Thr Asp Gly His		
181 186 191 196		
acc tct gtc cag agt gtt att gag aag ttg cag gaa gaa aat cga ctg		677
Thr Ser Val Gln Ser Val Ile Glu Lys Leu Gln Glu Glu Asn Arg Leu		
197 202 207 212		



tta aaa cag aag gtg act cac gtt gaa gac ctc aat gcc aag tgg cag	725
Leu Lys Gln Lys Val Thr His Val Glu Asp Leu Asn Ala Lys Trp Gln	
213 218/ 223 228	
cgc tac aac gcc agc agg gac gaa tac gtg agg ggg ctc cat gcg cag	773
Arg Tyr Asn Ala Ser Arg Asp Glu Tyr Val Arg Gly Leu His Ala Gln	
229 234 239 244	
ctc agg ggg ctg cag atc ccc cac gag ccc gag ctg atg agg aag gag	821
Leu Arg Gly Leu Gln Ile Pro His Glu Pro Glu Leu Met Arg Lys Glu	
245 250 255 260	
atc tcc cgg ctc aac aga cag ttg gaa gag aaa ata aat gac tgt gcc	869
Ile Ser Arg Leu Asn Arg Gln Leu Glu Glu Lys Ile Asn Asp Cys Ala	
261 266 271 276	
gaa gtg aag cag gag ctg gcg gcc tcc agg acg gcc cgg gat gct gcg	917
Glu Val Lys Gln Glu Leu Ala Ala Ser Arg Thr Ala Arg Asp Ala Ala	
277 282 287 292	
ttg gag cgg gtg cag atg ctg gaa cag cag gtg tct gtc cct cgg gct	965
Leu Glu Arg Val Gln Met Leu Glu Gln Gln Val Ser Val Pro Arg Ala	
293 298 303 308	
ccg gac ggc act gac cag atg tct gct ggc cgg tgg tgg ccg aaa tca	1013
Pro Asp Gly Thr Asp Gln Met Ser Ala Gly Arg Trp Trp Pro Lys Ser	
309 314 319 324	
tgg gac agg ctg ggc tga aggcctt ggtggcactg agtgggcagt ggtcactgtg	1067
Trp Asp Arg Leu Gly *	
325 330	
gggggtgggag aagcctgggg gggcgcttcc tccttccttg agcagaaatg tgtgtctcgc	1127
ctctcttcag attctcgctt acaaggatga cttcatgtca gaaagggccg atcggaacg	1187
ggctcaaagt aggattcaag aactggagga aaaggtcgcc tctttgctgc accaggtgtc	1247
ctggagacag gattctcgag agccagacgc cggccggatt cacgctggga gcaaaactgc	1307
caagtatttg gccgccgacg cattagagct tatggtgcct ggtggctgga ggctgggac	1367
tgggtcccag cagccagaac cccctgcaga gggcgggcat cctggcgccg ccagagagg	1427
ccagggggac cttcagtgcc ctactgcct gcagtgcctc agtgacgagc aaggggaaga	1487
gctcctcagg catgtggccg agtgctgcca gtgaccgaga ctcacccgtg cccttgccgc	1547
ctcctggccc ggtgcagctg cctcagga caggggtgggt gctctcagat gccatgggtt	1607
gagctctact gagagccaag gccctagaa tagttgcggg gcactctgat cgttcacttt	1667
ggtccttttg gctatggaac aggtctgggtc acagggaaact gccagtgagg ctggaggctg	1727
gaggtggaga tggggtcagg aacatctggc agaggagggt ccagtcctgt gtctccatca	1787

ggcttaagcc agagctatct ggtgctggtg tgccagcccc tccccagcc tgcctagaaa 1847  
 ggggtggctg cctgagggag tcaactgtat ggtccccagg gtgggagccc catcctgttc 1907  
 tatggaataa agcgtcgcct ctctgcctcg aaccagtcaa atggagtatt gcggctgcac 1967  
 gtcacactag ggtggccacc cccgccattg cgagccacat gtctgcactg agaaactgca 2027  
 ttccagtagc atttgtcatc cagccggaag ttaaagcaca cttattttat tcacctattt 2087  
 ttataataaa cgttcttgct gctgtgaaaa aaaaaaaaaa a 2128

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 <212> DNA  
 <213> Homo sapiens

<220>  
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 <222> (136)..(498)

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 gcgcagcacc tcacc atg gac tgc acc tgg agg atc ctc ttc ttg gtg gca 171  
                   Met Asp Cys Thr Trp Arg Ile Leu Phe Leu Val Ala  
                   1                  5                  10  
 gca gct aca ggc acc cac gcc cag gtc cag ctg gta cag tct ggg gct 219  
 Ala Ala Thr Gly Thr His Ala Gln Val Gln Leu Val Gln Ser Gly Ala  
   13                  18                  23                  28  
 gag gtg aag aag cct ggg gcc tca gtg aag gtc tcc tgc aag gtt tcc 267  
 Glu Val Lys Lys Pro Gly Ala Ser Val Lys Val Ser Cys Lys Val Ser  
   29                  34                  39                  44  
 gga tac acc ctc act gaa tta tcc atg cac tgg gtg cga cag gct cct 315  
 Gly Tyr Thr Leu Thr Glu Leu Ser Met His Trp Val Arg Gln Ala Pro  
   45                  50                  55                  60  
 gga aaa ggg ctt gag tgg atg gga gct ttt gat cct gaa gat ggt gaa 363  
 Gly Lys Gly Leu Glu Trp Met Gly Ala Phe Asp Pro Glu Asp Gly Glu  
   61                  66                  71                  76  
 aca atc tac gca cag aag ttc cag ggc aga gtc acc atg acc gag gac 411  
 Thr Ile Tyr Ala Gln Lys Phe Gln Gly Arg Val Thr Met Thr Glu Asp  
   77                  82                  87                  92  
 aca tct aca gac aca ggc tac atg ggg ctg agc agc ctg aga tct gag 459  
 Thr Ser Thr Asp Thr Gly Tyr Met Gly Leu Ser Ser Leu Arg Ser Glu  
   93                  98                  103                  108

gac acg gcc gtg tat tat tgt gca aca gac aca gtg tga aaacccacat 508  
 Asp Thr Ala Val Tyr Tyr Cys Ala Thr Asp Thr Val \*  
 109 114 119

cctgagagcg tcagaaaccc tgaggaatga ggcagctgtg ctgaggctga ggagatgaca 568

ggatttatga agtttaaatac tgtttagaaa atgggttgag taattgagta aaacagcaat 628

ggaaaaaac gaaatcgga cagcgaagtc gacccgggaa 668

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agaccctttg ggactttag ctccactccg gggaaacggac tcgcggggac tgacagttgc 180

cggaagtgag gctgcgggga atg gcc gcc gct gcg acc atg gcg gct gcg 230  
 Met Ala Ala Ala Ala Thr Met Ala Ala Ala  
 1 5

gcc cgg gaa ctg gtg ttg cgg gct ggg acc tca gat atg gag gag gaa 278  
 Ala Arg Glu Leu Val Leu Arg Ala Gly Thr Ser Asp Met Glu Glu Glu  
 11 16 21 26

gag ggc ccg ctg gcg ggt ggt cct ggg ctc cag gaa cca ctg caa ctt 326  
 Glu Gly Pro Leu Ala Gly Gly Pro Gly Leu Gln Glu Pro Leu Gln Leu  
 27 32 37 42

ggg gag ttg gat atc act tct gat gaa ttc atc ctg gat gaa gtg gat 374  
 Gly Glu Leu Asp Ile Thr Ser Asp Glu Phe Ile Leu Asp Glu Val Asp  
 43 48 53 58

gtt cac att cag gca aat ctg gag gat gag tta gta aag gaa gct ctt 422  
 Val His Ile Gln Ala Asn Leu Glu Asp Glu Leu Val Lys Glu Ala Leu  
 59 64 69 74

aaa acg ggt gta gat ctc cgt cac tat tca aag caa gtt gag ctg gag 470  
 Lys Thr Gly Val Asp Leu Arg His Tyr Ser Lys Gln Val Glu Leu Glu  
 75 80 85 90

cta cag cag att gaa cag aaa tcc att cgg gat tat att caa gag agt 518  
 Leu Gln Gln Ile Glu Gln Lys Ser Ile Arg Asp Tyr Ile Gln Glu Ser  
 91 96 101 106

gag aat ata gca tct cta cac aac cag atc aca gcc tgt gat gct gtc	566
Glu Asn Ile Ala Ser Leu His Asn Gln Ile Thr Ala Cys Asp Ala Val	
107 112 117 122	
ctg gag cga atg gag cag atg ttg gga gct ttt cag agt gac ctc agc	614
Leu Glu Arg Met Glu Gln Met Leu Gly Ala Phe Gln Ser Asp Leu Ser	
123 128 133 138	
tcc atc agc tct gag atc cgg aca ctg cag gaa cag tca gga gcc atg	662
Ser Ile Ser Ser Glu Ile Arg Thr Leu Gln Glu Gln Ser Gly Ala Met	
139 144 149 154	
aac att cga ctt cga aat cgc cag gca gtt cgg ggg aaa ctt ggg gag	710
Asn Ile Arg Leu Arg Asn Arg Gln Ala Val Arg Gly Lys Leu Gly Glu	
155 160 165 170	
ctt gtt gat ggt ctg gtg gtg cct tct gct ctg gtc acg gca att ctg	758
Leu Val Asp Gly Leu Val Val Pro Ser Ala Leu Val Thr Ala Ile Leu	
171 176 181 186	
gag gct cca gtg aca gag ccc agg ttc ttg gag cag cta cag gag ctg	806
Glu Ala Pro Val Thr Glu Pro Arg Phe Leu Glu Gln Leu Gln Glu Leu	
187 192 197 202	
gat gcc aag gca gcc gca gtc aga gag cag gaa gct aga ggc aca gca	854
Asp Ala Lys Ala Ala Ala Val Arg Glu Gln Glu Ala Arg Gly Thr Ala	
203 208 213 218	
gcc tgc gca gat gtc aga ggc gtg ctc gat cgg ctc cgg gtc aag gca	902
Ala Cys Ala Asp Val Arg Gly Val Leu Asp Arg Leu Arg Val Lys Ala	
219 224 229 234	
gtg acg aag atc cga gag ttt atc ctc cag aag att tat tcc ttc agg	950
Val Thr Lys Ile Arg Glu Phe Ile Leu Gln Lys Ile Tyr Ser Phe Arg	
235 240 245 250	
aaa ccc atg acc aac tat cag atc ccc cag acg gcc ctg ctg aag tac	998
Lys Pro Met Thr Asn Tyr Gln Ile Pro Gln Thr Ala Leu Leu Lys Tyr	
251 256 261 266	
agg ttc ttc tat cag ttt ctg ctg ggc aat gaa cga gca aca gca aag	1046
Arg Phe Phe Tyr Gln Phe Leu Leu Gly Asn Glu Arg Ala Thr Ala Lys	
267 272 277 282	
gag atc agg gat gaa tat gtg gag acg ctg agc aag att tac ctg tct	1094
Glu Ile Arg Asp Glu Tyr Val Glu Thr Leu Ser Lys Ile Tyr Leu Ser	
283 288 293 298	
tac tac cgc tct tac ctg ggg cgg ctc atg aag gtg cag tat gag gaa	1142
Tyr Tyr Arg Ser Tyr Leu Gly Arg Leu Met Lys Val Gln Tyr Glu Glu	
299 304 309 314	
gtc gct gag aaa gat gat cta atg ggt gtg gaa gat aca gca aag aaa	1190
Val Ala Glu Lys Asp Asp Leu Met Gly Val Glu Asp Thr Ala Lys Lys	
315 320 325 330	
gga ttc ttc tca aag cca tcg ctc cgc agc agg aac acc att ttc acc	1238

Gly Phe Phe Ser Lys Pro Ser Leu Arg Ser Arg Asn Thr Ile Phe Thr	
331 336 341 346	
cta gga acc cgc ggc tct gtc atc tcc ccc act gaa ctt gag gcc ccc	1286
Leu Gly Thr Arg Gly Ser Val Ile Ser Pro Thr Glu Leu Glu Ala Pro	
347 352 357 362	
atc ctg gtg cct cac aca gcg cag cgc gga gag cag agg tat cca ttt	1334
Ile Leu Val Pro His Thr Ala Gln Arg Gly Glu Gln Arg Tyr Pro Phe	
363 368 373 378	
gag gcc ctc ttc cgc agc cag cac tac gcc ctc cta gac aat tcc tgc	1382
Glu Ala Leu Phe Arg Ser Gln His Tyr Ala Leu Leu Asp Asn Ser Cys	
379 384 389 394	
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504

509

514

519

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Leu Arg Gly Phe Leu Gly Ile Ala Gly Phe Cys Leu Ile Asn Ala Gly  
64 69 74 79  
gtc ctg tac ctc tac ttc agc aat tac cta cag att gat gag gaa gaa 466  
Val Leu Tyr Leu Tyr Phe Ser Asn Tyr Leu Gln Ile Asp Glu Glu Glu  
80 85 90 95  
tat ggt ggc acg tgg gag ctc acg aag gaa ggg ttt atg acc tct ttt 514

Tyr Gly Gly Thr Trp Glu Leu Thr Lys Glu Gly Phe Met Thr Ser Phe  
 96 101 106 111  
 gcc ttg ttc atg gtc att tgg atc atc ttt tac act gcc atc cat tat 562  
 Ala Leu Phe Met Val Ile Trp Ile Ile Phe Tyr Thr Ala Ile His Tyr  
 112 117 122 127  
 gac tga tgggtgtacag ctcccaagtg ctccctatcc agtccaaagg accctcttga 618  
 Asp \*  
 128  
 ttacagcaca ggaacttgat cgttggggaa cccagcccc ttggaacttg gaagaccctg 678  
 gtttcttgga ccgcgaatca gtgtgttggg catcagtgtt ttctgcaagg gttgtgacct 738  
 gaaactttttt aaaaaccccc cccctttggg gaagcatttt tgaatttatc catccccaac 798  
 cattttttttt tggataccat caagtaacag ctattatttg ccaagtggag ctgtcattta 858  
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 Met Val Arg Thr Lys Thr Trp  
 1 5  
 acc ctg aag aag cac ttt gtt ggc tat cct act aat agt gac ttt gag 161  
 Thr Leu Lys Lys His Phe Val Gly Tyr Pro Thr Asn Ser Asp Phe Glu  
 8 13 18 23  
 ttg aag aca gct gag ctc cca ccc tta aaa aat gga gag gtc ctg ctt 209  
 Leu Lys Thr Ala Glu Leu Pro Pro Leu Lys Asn Gly Glu Val Leu Leu  
 24 29 34 39  
 gaa gct ttg ttc ctc acc gtg gat ccc tac atg aga gtg gca gcc aaa 257  
 Glu Ala Leu Phe Leu Thr Val Asp Pro Tyr Met Arg Val Ala Ala Lys  
 40 45 50 55  
 aga ttg aag gaa ggt gat aca atg atg ggg cag caa gtg gcc aaa gtt 305  
 Arg Leu Lys Glu Gly Asp Thr Met Met Gly Gln Gln Val Ala Lys Val  
 56 61 66 71  
 gtg gaa agt aaa aat gta gcc cta cca aaa gga act att gta ctg gct 353

Val	Glu	Ser	Lys	Asn	Val	Ala	Leu	Pro	Lys	Gly	Thr	Ile	Val	Leu	Ala		
72					77					82					87		
tct	cca	ggc	tgg	aca	acg	cac	tcc	att	tct	gat	ggg	aaa	gat	ctg	gaa	401	
Ser	Pro	Gly	Trp	Thr	Thr	His	Ser	Ile	Ser	Asp	Gly	Lys	Asp	Leu	Glu		
88					93					98					103		
aag	ctg	ctg	aca	gag	tgg	cca	gac	aca	ata	cca	ctg	tct	ttg	gct	ctg	449	
Lys	Leu	Leu	Thr	Glu	Trp	Pro	Asp	Thr	Ile	Pro	Leu	Ser	Leu	Ala	Leu		
104					109					114					119		
ggg	aca	gtt	ggc	atg	cca	ggc	ctg	act	gcc	tac	ttt	ggc	cta	ctt	gaa	497	
Gly	Thr	Val	Gly	Met	Pro	Gly	Leu	Thr	Ala	Tyr	Phe	Gly	Leu	Leu	Glu		
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atc	tgt	ggt	gtg	aag	ggt	gga	gaa	aca	gtg	atg	gtt	aat	gca	gca	gct	545	
Ile	Cys	Gly	Val	Lys	Gly	Gly	Glu	Thr	Val	Met	Val	Asn	Ala	Ala	Ala		
136					141					146					151		
gga	gct	gtg	ggc	tca	gtc	gtg	ggg	cag	att	gca	aag	ctc	aag	ggc	tgc	593	
Gly	Ala	Val	Gly	Ser	Val	Val	Gly	Gln	Ile	Ala	Lys	Leu	Lys	Gly	Cys		
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Lys	Val	Val	Gly	Ala	Val	Gly	Ser	Asp	Glu	Lys	Val	Ala	Tyr	Leu	Gln		
168					173					178					183		
aag	ctt	gga	ttt	gat	gtc	gtc	ttt	aac	tac	aag	acg	gta	gag	tct	ttg	689	
Lys	Leu	Gly	Phe	Asp	Val	Val	Phe	Asn	Tyr	Lys	Thr	Val	Glu	Ser	Leu		
184					189					194					199		
gaa	gaa	acc	ttg	aag	aaa	gcg	tct	cct	gat	ggt	tat	gat	tgt	tat	ttt	737	
Glu	Glu	Thr	Leu	Lys	Lys	Ala	Ser	Pro	Asp	Gly	Tyr	Asp	Cys	Tyr	Phe		
200					205					210					215		
gat	aat	gta	ggt	gga	gag	ttt	tca	aac	act	gtt	atc	ggc	cag	atg	aag	785	
Asp	Asn	Val	Gly	Gly	Glu	Phe	Ser	Asn	Thr	Val	Ile	Gly	Gln	Met	Lys		
216					221					226					231		
aaa	ttt	gga	agg	att	gcc	ata	tgt	gga	gcc	atc	tct	aca	tat	aac	aga	833	
Lys	Phe	Gly	Arg	Ile	Ala	Ile	Cys	Gly	Ala	Ile	Ser	Thr	Tyr	Asn	Arg		
232					237					242					247		
acc	ggc	cca	ctt	ccc	cca	ggc	cca	ccc	cca	gag	att	gtt	atc	tat	cag	881	
Thr	Gly	Pro	Leu	Pro	Pro	Gly	Pro	Pro	Pro	Glu	Ile	Val	Ile	Tyr	Gln		
248					253					258					263		
gag	ctt	cgc	atg	gaa	gct	ttt	gtc	gtc	tac	cgc	tgg	caa	gga	gat	gcc	929	
Glu	Leu	Arg	Met	Glu	Ala	Phe	Val	Val	Tyr	Arg	Trp	Gln	Gly	Asp	Ala		
264					269					274					279		
cgc	caa	aaa	gct	ctg	aag	gac	ttg	ctg	aaa	tgg	gtc	tta	gag	ggt	aaa	977	
Arg	Gln	Lys	Ala	Leu	Lys	Asp	Leu	Leu	Lys	Trp	Val	Leu	Glu	Gly	Lys		
280					285					290					295		
atc	cag	tac	aag	gaa	tat	atc	att	gaa	gga	ttt	gaa	aac	atg	cca	gct	1025	
Ile	Gln	Tyr	Lys	Glu	Tyr	Ile	Ile	Glu	Gly	Phe	Glu	Asn	Met	Pro	Ala		

296	301	306	311	
gca ttt atg gga atg ctg aaa gga gat aat ttg ggg aag aca ata gtg				1073
Ala Phe Met Gly Met Leu Lys Gly Asp Asn Leu Gly Lys Thr Ile Val				
312	317	322	327	
aaa gca tga aaaagag gacacatgga atctggaggc catttagatg attagttaat				1129
Lys Ala *				
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tg				1131

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ctcgcctggga ctccctggga g atg agg ccg cga ggt ctc ccg ccg ctc ctg	171
Met Arg Pro Arg Gly Leu Pro Pro Leu Leu	
1 5	
gtg gtg ctc ctg ggc tgc tgg gcc tcc gtg agc gcc cag acc gat gcc	219
Val Val Leu Leu Gly Cys Trp Ala Ser Val Ser Ala Gln Thr Asp Ala	
11 16 21 26	
acc ccg gcg gtg acg aca gag ggc ctc aac tcc acc gag gca gcc ctg	267
Thr Pro Ala Val Thr Thr Glu Gly Leu Asn Ser Thr Glu Ala Ala Leu	
27 32 37 42	
gcc acc ttc gga act ttc ccg tcg acc agg ccc ccc ggg act ccc agg	315
Ala Thr Phe Gly Thr Phe Pro Ser Thr Arg Pro Pro Gly Thr Pro Arg	
43 48 53 58	
gct cca ggg ccc tcc tcc ggc ccc agg cct acc cca gtc acg gac gtt	363
Ala Pro Gly Pro Ser Ser Gly Pro Arg Pro Thr Pro Val Thr Asp Val	
59 64 69 74	
gct gtt ctc tgt gtc tgt gac tta tcc cca gca cag tgt gac atc aac	411
Ala Val Leu Cys Val Cys Asp Leu Ser Pro Ala Gln Cys Asp Ile Asn	
75 80 85 90	
tgc tgc tgt gat ccc gac tgc agc tcc gtg gat ttc agt gtc ttt tct	459
Cys Cys Cys Asp Pro Asp Cys Ser Ser Val Asp Phe Ser Val Phe Ser	
91 96 101 106	



gcc tgc tca gtt cca gtt gtc acg ggc gac agc cag ttt tgt agt caa	507
Ala Cys Ser Val Pro Val Val Thr Gly Asp Ser Gln Phe Cys Ser Gln	
107 112 117 122	
aaa gca gtc atc tat tca ttg aat ttt aca gca aac cca cct caa aga	555
Lys Ala Val Ile Tyr Ser Leu Asn Phe Thr Ala Asn Pro Pro Gln Arg	
123 128 133 138	
gta ttt gaa ctt gtt gac cag att aat cca tct att ttc tgc att cat	603
Val Phe Glu Leu Val Asp Gln Ile Asn Pro Ser Ile Phe Cys Ile His	
139 144 149 154	
att aca aac tat aaa cct gca tta tcc ttt att aat cca gaa gta cct	651
Ile Thr Asn Tyr Lys Pro Ala Leu Ser Phe Ile Asn Pro Glu Val Pro	
155 160 165 170	
gat gaa aac aat ttt gat aca ttg atg aaa aca tct gat ggt ttt aca	699
Asp Glu Asn Asn Phe Asp Thr Leu Met Lys Thr Ser Asp Gly Phe Thr	
171 176 181 186	
ttg aat gct gaa tca tat gtt tcc ttc aca acc aaa ctg gat att cct	747
Leu Asn Ala Glu Ser Tyr Val Ser Phe Thr Thr Lys Leu Asp Ile Pro	
187 192 197 202	
act gct gct aaa tat gag tat ggg gtt cct ctg cag act tca gat tcg	795
Thr Ala Ala Lys Tyr Glu Tyr Gly Val Pro Leu Gln Thr Ser Asp Ser	
203 208 213 218	
ttt ctg aga ttt cct tcg tcc ctg aca tca tct ctg tgc act gat aat	843
Phe Leu Arg Phe Pro Ser Ser Leu Thr Ser Ser Leu Cys Thr Asp Asn	
219 224 229 234	
aac cct gca gcg ttt ctg gtg aac cag gct gtt aag tgc acc aga aaa	891
Asn Pro Ala Ala Phe Leu Val Asn Gln Ala Val Lys Cys Thr Arg Lys	
235 240 245 250	
ata aat tta gaa cag tgt gaa gaa att gaa gcc ctc agc atg gct ttt	939
Ile Asn Leu Glu Gln Cys Glu Glu Ile Glu Ala Leu Ser Met Ala Phe	
251 256 261 266	
tac agc agc ccg gaa att ctg agg gta cct gat tca aga aaa aag gtc	987
Tyr Ser Ser Pro Glu Ile Leu Arg Val Pro Asp Ser Arg Lys Lys Val	
267 272 277 282	
cct atc act gtt cag tcc atc gtc att cag tct cta aat aaa acg ctc	1035
Pro Ile Thr Val Gln Ser Ile Val Ile Gln Ser Leu Asn Lys Thr Leu	
283 288 293 298	
acc cga cgg gag gac act gat gtg ctg cag ccg act ctc gtc aac gct	1083
Thr Arg Arg Glu Asp Thr Asp Val Leu Gln Pro Thr Leu Val Asn Ala	
299 304 309 314	
gga cac ttt agc ctt tgc gtg aat gtt gtt ctt gag gta aag tac agc	1131
Gly His Phe Ser Leu Cys Val Asn Val Val Leu Glu Val Lys Tyr Ser	
315 320 325 330	
ctc aca tac aca gat gca ggt gaa gtc acc aaa gct gat ctc tca ttc	1179

Leu Thr Tyr Thr Asp	Ala Gly Glu Val Thr	Lys Ala Asp Leu Ser Phe	
331	336	341	346
gtt ctg ggg aca gtt agc agc gta gtg gtc	cca ctg cag caa aag ttt	1227	
Val Leu Gly Thr Val Ser Ser Val Val Val	Pro Leu Gln Gln Lys Phe		
347	352 357	362	
gaa att cat ttt ctt cag gaa aat acc cag	cca gtc cct ctc agt gga	1275	
Glu Ile His Phe Leu Gln Glu Asn Thr Gln	Pro Val Pro Leu Ser Gly		
363	368 373	378	
aac cct ggt tat gtc gtg ggg ctc cca tta gct gct gga ttc cag cct	1323		
Asn Pro Gly Tyr Val Val Gly Leu Pro Leu Ala Ala Gly Phe Gln Pro			
379	384 389	394	
cat aag ggt gga gct ctc ccg tgt cag ctc gta gca cag aag gtg aag	1371		
His Lys Gly Gly Ala Leu Pro Cys Gln Leu Val Ala Gln Lys Val Lys			
395	400 405	410	
agc ctg ctg tgg ggc cag ggc ttc cca gat tac gtg gcc cct ttt gga	1419		
Ser Leu Leu Trp Gly Gln Gly Phe Pro Asp Tyr Val Ala Pro Phe Gly			
411	416 421	426	
aat tcc cag gcc cag gac atg ctg gac tgg gtg ccc atc cac ttc atc	1467		
Asn Ser Gln Ala Gln Asp Met Leu Asp Trp Val Pro Ile His Phe Ile			
427	432 437	442	
acc cag tca ttc aac agg aag gat tcc tgc cag ctc cca ggg gct ttg	1515		
Thr Gln Ser Phe Asn Arg Lys Asp Ser Cys Gln Leu Pro Gly Ala Leu			
443	448 453	458	
gtt ata gaa gtg aag tgg act aaa tac gga tcc ctg ctg aat cca cag	1563		
Val Ile Glu Val Lys Trp Thr Lys Tyr Gly Ser Leu Leu Asn Pro Gln			
459	464 469	474	
gcc aaa ata gtc aat gta act gca aat cta att tca tcc tcc ttt cct	1611		
Ala Lys Ile Val Asn Val Thr Ala Asn Leu Ile Ser Ser Ser Phe Pro			
475	480 485	490	
gag gcc aac tca gga aat gaa agg acg att ctt att tcc act gcg gtt	1659		
Glu Ala Asn Ser Gly Asn Glu Arg Thr Ile Leu Ile Ser Thr Ala Val			
491	496 501	506	
act ttt gtg gat gtg tct gca cct gca gag gca ggc ttc aga gct cca	1707		
Thr Phe Val Asp Val Ser Ala Pro Ala Glu Ala Gly Phe Arg Ala Pro			
507	512 517	522	
cca gcc atc aat gcc agg ctg ccc ttt aac ttc ttc ttc ccg ttt gtt	1755		
Pro Ala Ile Asn Ala Arg Leu Pro Phe Asn Phe Phe Phe Pro Phe Val			
523	528 533	538	
tga caat gctcagatgc atcagttcct taatatacac gtgaaatttg aaaactgtac	1812		
* 539			
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ctcagttctg	cttctagcca	cgccctttcg	cgttcacgtc	cagcgccctg	gcgggattga	180
tttgaggacg	actggactgc	cattgcgcct	gcgcagggag	cccaaggcaa	gagccgctag	240
gctgccctgc	ccgaagggtc	caactgtcag	tgagcctgcg	caggaggcca	ataggctgcc	300
aatactcctt	ggactccccg	ccagggccct	gctgtcagtg	cgctgcgcgc	cgggtcgggc	360
gccgaggttc	ttgactgctg	tgccggacgc	caggtgtagc	c	atg cag cga gcc	413
					Met Gln Arg Ala	
					1	
gat tcc gag cag ccc tcc aag cgt ccc cgt tgc	gat gac agc ccg aga	461				
Asp Ser Glu Gln Pro Ser Lys Arg Pro Arg Cys Asp Asp Ser Pro Arg						
5 10 15 20						
acc ccc tca aac acc cct tcc gca gag gca gac tgg tcc ccg ggc ctg	509					
Thr Pro Ser Asn Thr Pro Ser Ala Glu Ala Asp Trp Ser Pro Gly Leu						
21 26 31 36						
gaa ctc cat ccc gac tac aag aca tgg ggt ccg gag cag gtg tgc tcc	557					
Glu Leu His Pro Asp Tyr Lys Thr Trp Gly Pro Glu Gln Val Cys Ser						
37 42 47 52						
ttc ctc agg cgc ggt ggc ttt gaa gag ccg gtg ctg ctg aag aac atc	605					
Phe Leu Arg Arg Gly Gly Phe Glu Glu Pro Val Leu Leu Lys Asn Ile						
53 58 63 68						
cga gaa aat gaa atc aca ggc gca tta ctg cct tgt ctt gat gag tct	653					
Arg Glu Asn Glu Ile Thr Gly Ala Leu Leu Pro Cys Leu Asp Glu Ser						
69 74 79 84						
cgt ttt gaa aat ctt gga gta agt tcc ttg ggg gag agg aag aag ctg	701					
Arg Phe Glu Asn Leu Gly Val Ser Ser Leu Gly Glu Arg Lys Lys Leu						
85 90 95 100						
ctt agt tat atc cag cga ttg gtt caa atc cac gtt gat aca atg aag	749					
Leu Ser Tyr Ile Gln Arg Leu Val Gln Ile His Val Asp Thr Met Lys						
101 106 111 116						

gta att aat gat cct atc cat ggc cac att gag ctc cac cct ctc ctc	797
Val Ile Asn Asp Pro Ile His Gly His Ile Glu Leu His Pro Leu Leu	
117 122 127 132	
gtc cga atc att gat aca cct caa ttt caa cgt ctt cga tac atc aaa	845
Val Arg Ile Ile Asp Thr Pro Gln Phe Gln Arg Leu Arg Tyr Ile Lys	
133 138 143 148	
cag ctg gga ggt ggt tac tat gtt ttt cca gga gct tca cac aat cga	893
Gln Leu Gly Gly Gly Tyr Tyr Val Phe Pro Gly Ala Ser His Asn Arg	
149 154 159 164	
ttt gag cat agt cta ggg gtg ggg tat cta gca gga tgt cta gtt cac	941
Phe Glu His Ser Leu Gly Val Gly Tyr Leu Ala Gly Cys Leu Val His	
165 170 175 180	
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Ala Leu Gly Glu Lys Gln Pro Glu Leu Gln Ile Ser Glu Arg Asp Val	
181 186 191 196	
ctc tgt gtt cag att gct gga ctt tgt cat gat ctc ggt cat ggg cca	1037
Leu Cys Val Gln Ile Ala Gly Leu Cys His Asp Leu Gly His Gly Pro	
197 202 207 212	
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Phe Ser His Met Phe Asp Gly Arg Phe Ile Pro Leu Ala Arg Pro Glu	
213 218 223 228	
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Val Lys Trp Thr His Glu Gln Gly Ser Val Met Met Phe Glu His Leu	
229 234 239 244	
att aat tct aat gga att aag cct gtc atg gaa caa tat ggt ctc atc	1181
Ile Asn Ser Asn Gly Ile Lys Pro Val Met Glu Gln Tyr Gly Leu Ile	
245 250 255 260	
cct gaa gaa gat att tgc ttt ata aag gaa caa att gta gga cca ctt	1229
Pro Glu Glu Asp Ile Cys Phe Ile Lys Glu Gln Ile Val Gly Pro Leu	
261 266 271 276	
gaa tca cct gtc gaa gat tca ttg tgg cca tat aaa ggg cgt cct gaa	1277
Glu Ser Pro Val Glu Asp Ser Leu Trp Pro Tyr Lys Gly Arg Pro Glu	
277 282 287 292	
aac aaa agc ttc ctt tat gag ata gta tct aat aaa aga aat ggc att	1325
Asn Lys Ser Phe Leu Tyr Glu Ile Val Ser Asn Lys Arg Asn Gly Ile	
293 298 303 308	
gat gtg gac aaa tgg gat tat ttt gcc agg gac tgc cat cat ctt gga	1373
Asp Val Asp Lys Trp Asp Tyr Phe Ala Arg Asp Cys His His Leu Gly	
309 314 319 324	
atc caa aat aat ttt gat tac aag cgc ttt att aag ttt gcc cgt gtc	1421
Ile Gln Asn Asn Phe Asp Tyr Lys Arg Phe Ile Lys Phe Ala Arg Val	
325 330 335 340	
tgt gaa gta gac aat gag ttg cgt att tgt gct aga gat aag gaa gtt	1469

Cys	Glu	Val	Asp	Asn	Glu	Leu	Arg	Ile	Cys	Ala	Arg	Asp	Lys	Glu	Val		
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Gly	Asn	Leu	Tyr	Asp	Met	Phe	His	Thr	Arg	Asn	Ser	Leu	His	Arg	Arg		
357					362					367					372		
gct	tat	caa	cac	aaa	gtt	ggc	aac	att	att	gat	aca	atg	att	aca	gat	1565	
Ala	Tyr	Gln	His	Lys	Val	Gly	Asn	Ile	Ile	Asp	Thr	Met	Ile	Thr	Asp		
373					378					383					388		
gct	ttc	ctc	aaa	gca	gat	gac	tac	ata	gag	att	aca	ggt	gct	gga	gga	1613	
Ala	Phe	Leu	Lys	Ala	Asp	Asp	Tyr	Ile	Glu	Ile	Thr	Gly	Ala	Gly	Gly		
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Lys	Lys	Tyr	Arg	Ile	Ser	Thr	Ala	Ile	Asp	Asp	Met	Glu	Ala	Tyr	Thr		
405					410					415					420		
aag	ctg	aca	gat	aac	att	ttt	ctg	gag	att	tta	tac	tct	act	gat	ccc	1709	
Lys	Leu	Thr	Asp	Asn	Ile	Phe	Leu	Glu	Ile	Leu	Tyr	Ser	Thr	Asp	Pro		
421					426					431					436		
aaa	ttg	aaa	gac	gca	cga	gag	att	tta	aaa	caa	att	gaa	tac	cgt	aat	1757	
Lys	Leu	Lys	Asp	Ala	Arg	Glu	Ile	Leu	Lys	Gln	Ile	Glu	Tyr	Arg	Asn		
437					442					447					452		
cta	ttc	aag	tat	gtg	ggt	gag	acg	cag	cca	aca	gga	caa	ata	aag	att	1805	
Leu	Phe	Lys	Tyr	Val	Gly	Glu	Thr	Gln	Pro	Thr	Gly	Gln	Ile	Lys	Ile		
453					458					463					468		
aaa	agg	gag	gac	tat	gaa	tct	ctt	cca	aaa	gag	gtt	gcc	agt	gct	aaa	1853	
Lys	Arg	Glu	Asp	Tyr	Glu	Ser	Leu	Pro	Lys	Glu	Val	Ala	Ser	Ala	Lys		
469					474					479					484		
ccc	aaa	gta	ttg	cta	gac	gtg	aaa	ctg	aag	gct	gaa	gat	ttt	ata	gtg	1901	
Pro	Lys	Val	Leu	Leu	Asp	Val	Lys	Leu	Lys	Ala	Glu	Asp	Phe	Ile	Val		
485					490					495					500		
gat	gtt	atc	aac	atg	gat	tat	gga	atg	caa	gaa	aag	aat	cca	att	gat	1949	
Asp	Val	Ile	Asn	Met	Asp	Tyr	Gly	Met	Gln	Glu	Lys	Asn	Pro	Ile	Asp		
501					506					511					516		
cat	gtt	agc	ttc	tat	tgt	aag	act	gcc	ccc	aac	aga	gca	atc	agg	att	1997	
His	Val	Ser	Phe	Tyr	Cys	Lys	Thr	Ala	Pro	Asn	Arg	Ala	Ile	Arg	Ile		
517					522					527					532		
act	aaa	aac	cag	gtt	tca	caa	ctt	ctg	cca	gag	aaa	ttt	gca	gag	cag	2045	
Thr	Lys	Asn	Gln	Val	Ser	Gln	Leu	Leu	Pro	Glu	Lys	Phe	Ala	Glu	Gln		
533					538					543					548		
ctg	att	cga	gta	tat	tgt	aag	aag	gtg	gac	aga	aag	agt	ttg	tat	gcc	2093	
Leu	Ile	Arg	Val	Tyr	Cys	Lys	Lys	Val	Asp	Arg	Lys	Ser	Leu	Tyr	Ala		
549					554					559					564		
gca	aga	caa	tat	ttt	gtt	cag	tgg	tgt	gca	gac	aga	aat	ttc	acc	aag	2141	
Ala	Arg	Gln	Tyr	Phe	Val	Gln	Trp	Cys	Ala	Asp	Arg	Asn	Phe	Thr	Lys		

565	570	575	580	
ccg cag gat ggc gat gtt ata gcc cca ctc ata aca cct caa aaa aag				2189
Pro Gln Asp Gly Asp Val Ile Ala Pro Leu Ile Thr Pro Gln Lys Lys				
581	586	591	596	
gaa tgg aac gac agt act tca gtc caa aat cca act cgc ctc cga gaa				2237
Glu Trp Asn Asp Ser Thr Ser Val Gln Asn Pro Thr Arg Leu Arg Glu				
597	602	607	612	
gca tcc aaa agc aga gtc cag ctt ttt aaa gat gac cca atg tga atg				2285
Ala Ser Lys Ser Arg Val Gln Leu Phe Lys Asp Asp Pro Met *				
613	618	623		
tctgtagtca gttgtttaca aactccctct cctgcacaat tcatttagag gcttcaatca				2345
tagaattctg caaattaatg acaactcatg ctttaatttt gtattttgaa tgtacacgca				2405
tgctgaagct aagtaacttt taatcaaaga aataagatgg tattaggcaa atcttactat				2465
actatgaaaa gcattacctt gcctatTTTT aatattatta aagcctttct ccttcagtag				2525
tctatTTTTct tagaataaca actcttttat ctattctgaa ctctatTTTT tttctTTTTt				2585
aagagacaag gttttgctct gttgcccagc ttggactcga actttcctgg gctcgagcga				2645
ccctcctgcc tcagcccccc aagtagctgg gactaaagtc atgtgccacc acaccagct				2705
tactctgaac ttttatgaca gatgattggt ttttgTTTTt aatgtagaaa tgagacaagg				2765
gtacaaaattg gaactagaaa				2785

<210> 206  
 <211> 2310  
 <212> DNA  
 <213> Homo sapiens

<220>  
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 <222> (750) .. (1427)

<220>  
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 <222> (1) ... (2310)  
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gctgccccga gagcagaggt tattccagga ttcttgctcg cctctgtaaa gggatccgt	120
tctgcagacc tttctgccgg tcacactgac ggcatattgc agagcctgcc agggactcac	180
aggggatgac aggggattta tcaggtggtt ttttactgca ctgtcattac tgggggcgaa	240

tccacttttaa tacattcatg cctcctgagc ctgtgggaat tcaagaggaa cagaaccaga	300
aataattgaa ccataactgc cctttggcat, cttgcctctt ctgggaggct taattttctta	360
caaatatgtg gctctgcttt tcaaattctta gtttgatgat tttctcttct tcntttttca	420
ggttttcccc ccacgacctg accgtgtcgc tatagtgcg ggaggacag atggcattgg	480
ctattctaca gcgaagcatc tggcgagact tggcatgcat gttatcatag ctggaaataa	540
tgacagcaaa gccaaacaag ttgtaagcaa aataaaagaa gaaaccttga acgacaaaga	600
gacgtgagtc ttgctgtgtt gcccgggctg gctttgcctc tggaaactcaa gcgatcctcc	660
cacctcagcc tctcgaggag ctgggactac aggcgtgcac catcatttcc tcctaaaatt	720
tggaattttt atactgtgac ttggcttcc atg act tcc atc cgg cag ttt gtg	773
Met Thr Ser Ile Arg Gln Phe Val	
1 5	
cag aag ttc aag atg aag aag att cct ctc cat gtc ctg atc aac aat	821
Gln Lys Phe Lys Met Lys Lys Ile Pro Leu His Val Leu Ile Asn Asn	
9 14 19 24	
gct ggg gtg atg atg gtc cct cag agg aaa acc aga gat gga ttc gaa	869
Ala Gly Val Met Met Val Pro Gln Arg Lys Thr Arg Asp Gly Phe Glu	
25 30 35 40	
gaa cat ttc ggc ctg aac tac cta ggg cac ttc ctg ctg acc aac ctt	917
Glu His Phe Gly Leu Asn Tyr Leu Gly His Phe Leu Leu Thr Asn Leu	
41 46 51 56	
ctc ttg gat acg ctg aaa gag tct ggg tcc cct ggc cac agt gcg agg	965
Leu Leu Asp Thr Leu Lys Glu Ser Gly Ser Pro Gly His Ser Ala Arg	
57 62 67 72	
gtg gtc acc gtc tcc tct gcc acc cat tac gtc gct gag ctg aac atg	1013
Val Val Thr Val Ser Ser Ala Thr His Tyr Val Ala Glu Leu Asn Met	
73 78 83 88	
gat gac ctt cag agc agt gcc tgc tac tca ccc cac gca gcc tac gcc	1061
Asp Asp Leu Gln Ser Ser Ala Cys Tyr Ser Pro His Ala Ala Tyr Ala	
89 94 99 104	
cag agc aag ctg gcc ctt gtc ctg ttc acc tac cac ctc cag cgg ctg	1109
Gln Ser Lys Leu Ala Leu Val Leu Phe Thr Tyr His Leu Gln Arg Leu	
105 110 115 120	
ctg gcg gct gag gga agc cac gtg acc gcc aac gtg gtg gac ccc ggg	1157
Leu Ala Ala Glu Gly Ser His Val Thr Ala Asn Val Val Asp Pro Gly	
121 126 131 136	
gtg gtc aac acg gac gtc tac aag cac gtg ttc tgg gcc acc cgt ctg	1205
Val Val Asn Thr Asp Val Tyr Lys His Val Phe Trp Ala Thr Arg Leu	
137 142 147 152	

gcg aag aag ctt ctc ggc tgg ttg ctt ttc aag acc ccc gat gaa gga	1253
Ala Lys Lys Leu Leu Gly Trp Leu Leu Phe Lys Thr Pro Asp Glu Gly	
153 158 163 168	
gcg tgg act tcc atc tac gca gca gtc acc cca gag ctg gaa gga gtt	1301
Ala Trp Thr Ser Ile Tyr Ala Ala Val Thr Pro Glu Leu Glu Gly Val	
169 174 179 184	
ggt ggc cat tac cta tac aac aag aaa gag acc aag tcc ctc cac gtc	1349
Gly Gly His Tyr Leu Tyr Asn Lys Lys Glu Thr Lys Ser Leu His Val	
185 190 195 200	
acc tac aac cag aaa ctg cag cag cag ctg tgg tct aag agt tgt gag	1397
Thr Tyr Asn Gln Lys Leu Gln Gln Gln Leu Trp Ser Lys Ser Cys Glu	
201 206 211 216	
atg act ggg gtc ctt gat gtg acc ctg tga t atcctgtctc aggatagctg	1448
Met Thr Gly Val Leu Asp Val Thr Leu *	
217 222	
ctgcccccaag aaacacattg cacctgccaa tagcttgtgg gtctgtgaag actgcggtgt	1508
ttgagtttct cacaccacc tgcccacagg gctctgtcct ctagttttga gacagctgcc	1568
tcaacctctg cagaacttca agaagccaaa taaacatttt ggaggataat caccccaagt	1628
ggtcttcaac cataaaacttt gtgattccaa agtgcccagt tgtcacaggt gccataaata	1688
attacatttt ccaacataaa tgtgccattt tccttgccgc gttaatacaa ctgagtacaa	1748
aagttccaag agagatgctc tcttttcagg ggctgcaatg tcctctctga gacctagtgg	1808
tggatgaggt ctctgtttg attttgttcc tgcactcact cattttttcca gagaccagc	1868
tgtgattcac aggtgtcaga catggggagg tgtgagcctt gcttgctaca gcctgtagga	1928
tgagtttgac gtggccagca gcaccatctg gtcaacctca ttccagaatg gcacagtcac	1988
aagtgaagca tgccactgtc aaatccgaga atgtaaaccg ctgaacagct atggatcaaa	2048
tggtagccct caaaagatat gtatcatgcc taaccctcag aacctataaa tattacttta	2108
tttggaagaa aatctttgca gatagaatta agaattttga gatgggtcat tatggatcat	2168
cccagtgaac ctaatgccat tcacgagggt tcttatncag aggacaggta gaggggagat	2228
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tggccaccac aggccaggca tg	2310

<210> 207

<211> 1341

<212> DNA

<213> Homo sapiens



<220>  
 <221> CDS  
 <222> (210)..(1145)

<400> 207

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gtctccagtc cgggaccgaa gccgcctgcc gtagcgggcg gccagatccg cgtcccgctt	180
cagcggccgg aggacatgcg ggagagaga atg agc cag agg gac acg ctg gtg	233
Met Ser Gln Arg Asp Thr Leu Val	
1 5	
cat ctg ttt gcc gga gga tgt ggt ggt aca gtg gga gct att ctg aca	281
His Leu Phe Ala Gly Gly Cys Gly Gly Thr Val Gly Ala Ile Leu Thr	
9 14 19 24	
tgt cca ctg gaa gtt gta aaa aca cga ctg cag tca tct tct gtg acg	329
Cys Pro Leu Glu Val Val Lys Thr Arg Leu Gln Ser Ser Ser Val Thr	
25 30 35 40	
ctt tat att tct gaa gtt cag ctg aac acc atg gct gga gcc agt gtc	377
Leu Tyr Ile Ser Glu Val Gln Leu Asn Thr Met Ala Gly Ala Ser Val	
41 46 51 56	
aac cga gta gtg tct ccc gga cct ctt cat tgc cta aag gtg atc ttg	425
Asn Arg Val Val Ser Pro Gly Pro Leu His Cys Leu Lys Val Ile Leu	
57 62 67 72	
gaa aaa gaa ggg cct cgt tcc ttg ttt aga gga cta ggc ccc aat tta	473
Glu Lys Glu Gly Pro Arg Ser Leu Phe Arg Gly Leu Gly Pro Asn Leu	
73 78 83 88	
gtg ggg gta gcc cct tcc aga gca ata tac ttt gct gct tat tca aac	521
Val Gly Val Ala Pro Ser Arg Ala Ile Tyr Phe Ala Ala Tyr Ser Asn	
89 94 99 104	
tgc aag gaa aag ttg aat gat gta ttt gat cct gat tct acc caa gta	569
Cys Lys Glu Lys Leu Asn Asp Val Phe Asp Pro Asp Ser Thr Gln Val	
105 110 115 120	
cat atg att tca gct gca atg gca ggt ttt act gca atc aca gca acc	617
His Met Ile Ser Ala Ala Met Ala Gly Phe Thr Ala Ile Thr Ala Thr	
121 126 131 136	
aac ccc att tgg ctt ata aag act cgg tta cag ctt gat gca agg aac	665
Asn Pro Ile Trp Leu Ile Lys Thr Arg Leu Gln Leu Asp Ala Arg Asn	
137 142 147 152	
cgc ggg gaa agg cga atg ggt gct ttt gaa tgt gtt cgt aaa gtg tat	713
Arg Gly Glu Arg Arg Met Gly Ala Phe Glu Cys Val Arg Lys Val Tyr	
153 158 163 168	
cag aca gat gga cta aaa gga ttt tat agg ggc atg tct gct tca tat	761

Gln Thr Asp Gly Leu Lys Gly Phe Tyr Arg Gly Met Ser Ala Ser Tyr	
169	174 179 184
gct ggt ata tca gag act gtt atc cat ttt gtt att tat gaa agt ata	809
Ala Gly Ile Ser Glu Thr Val Ile His Phe Val Ile Tyr Glu Ser Ile	
185	190 195 200
aaa caa aaa cta ctg gaa tat aag act gct tct aca atg gaa aat gat	857
Lys Gln Lys Leu Leu Glu Tyr Lys Thr Ala Ser Thr Met Glu Asn Asp	
201	206 211 216
gaa gag tct gtg aaa gaa gca tca gat ttt gtg gga atg atg cta gct	905
Glu Glu Ser Val Lys Glu Ala Ser Asp Phe Val Gly Met Met Leu Ala	
217	222 227 232
gct gcc acc tca aaa act tgt gcc aca act ata gca tat cca cat gaa	953
Ala Ala Thr Ser Lys Thr Cys Ala Thr Thr Ile Ala Tyr Pro His Glu	
233	238 243 248
gtt gta aga aca aga cta cgt gaa gag gga aca aaa tac aga tct ttt	1001
Val Val Arg Thr Arg Leu Arg Glu Glu Gly Thr Lys Tyr Arg Ser Phe	
249	254 259 264
ttt cag act cta tct ttg ctt gtt caa gaa gaa ggt tat ggg tct ctt	1049
Phe Gln Thr Leu Ser Leu Leu Val Gln Glu Glu Gly Tyr Gly Ser Leu	
265	270 275 280
tat cgt ggt ctg aca act cat cta gtg aga cag att cca aac aca gcc	1097
Tyr Arg Gly Leu Thr Thr His Leu Val Arg Gln Ile Pro Asn Thr Ala	
281	286 291 296
att atg atg gcc acc tat gaa ttg gtg gtt tac cta ctc aat gga tag	1145
Ile Met Met Ala Thr Tyr Glu Leu Val Val Tyr Leu Leu Asn Gly *	
297	302 307 312
cagcagcagg actgctgtac tgcaaaaaaa gaagacccaaa agattacagt ggaccatggg	1205
atacagaagc cagcatggca gacagaagaa aaatagtttg ggaacatgta actattctaa	1265
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<210> 208

<211> 1262

<212> DNA

<213> Homo sapiens

<220>

<221> CDS

<222> (210)..(1067)

<400> 208

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gtctccagtc cgggaccgaa gccgcctgcc gtagcggggcg gccagatccg cgtcccgct	180
cagcggccgg aggacatgcg ggagagaga atg agc cag agg gac acg ctg gtg	233
Met Ser Gln Arg Asp Thr Leu Val	
1 5	
cat ctg ttt gcc gga gga tgt ggt ggt aca gtg gga gct att ctg aca	281
His Leu Phe Ala Gly Gly Cys Gly Gly Thr Val Gly Ala Ile Leu Thr	
9 14 19 24	
tgt cca ctg gaa gtt gta aaa aca cga ctg cag tca tct tct gtg acg	329
Cys Pro Leu Glu Val Val Lys Thr Arg Leu Gln Ser Ser Ser Val Thr	
25 30 35 40	
ctt tat att tct gaa gtt cag ctg aac acc atg gct gga gcc agt gtc	377
Leu Tyr Ile Ser Glu Val Gln Leu Asn Thr Met Ala Gly Ala Ser Val	
41 46 51 56	
aac cga gta gtg tct ccc gga cct ctt cat tgc cta aaa gca ata tac	425
Asn Arg Val Val Ser Pro Gly Pro Leu His Cys Leu Lys Ala Ile Tyr	
57 62 67 72	
ttt gct gct tat tca aac tgc aag gaa aag ttg aat gat gta ttt gat	473
Phe Ala Ala Tyr Ser Asn Cys Lys Glu Lys Leu Asn Asp Val Phe Asp	
73 78 83 88	
cct gat tct acc caa gta cat atg att tca gct gca atg gca ggt ttt	521
Pro Asp Ser Thr Gln Val His Met Ile Ser Ala Ala Met Ala Gly Phe	
89 94 99 104	
act gca atc aca gca acc aac ccc att tgg ctt ata aag act cgg tta	569
Thr Ala Ile Thr Ala Thr Asn Pro Ile Trp Leu Ile Lys Thr Arg Leu	
105 110 115 120	
cag ctt gat gca agg aac cgc ggg gaa agg cga atg ggt gct ttt gaa	617
Gln Leu Asp Ala Arg Asn Arg Gly Glu Arg Arg Met Gly Ala Phe Glu	
121 126 131 136	
tgt gtt cgt aaa gtg tat cag aca gat gga cta aaa gga ttt tat agg	665
Cys Val Arg Lys Val Tyr Gln Thr Asp Gly Leu Lys Gly Phe Tyr Arg	
137 142 147 152	
ggc atg tct gct tca tat gct ggt ata tca gag act gtt atc cat ttt	713
Gly Met Ser Ala Ser Tyr Ala Gly Ile Ser Glu Thr Val Ile His Phe	
153 158 163 168	
gtt att tat gaa agt ata aaa caa aaa cta ctg gaa tat aag act gct	761
Val Ile Tyr Glu Ser Ile Lys Gln Lys Leu Leu Glu Tyr Lys Thr Ala	
169 174 179 184	
tct aca atg gaa aat gat gaa gag tct gtg aaa gaa gca tca gat ttt	809
Ser Thr Met Glu Asn Asp Glu Glu Ser Val Lys Glu Ala Ser Asp Phe	
185 190 195 200	

gtg gga atg atg cta gct gct gcc acc tca aaa act tgt gcc aca act 857  
Val Gly Met Met Leu Ala Ala Ala Thr Ser Lys Thr Cys Ala Thr Thr  
201 206 211 216

ata gca tat cca cat gaa gtt gta aga aca aga cta cgt gaa gag gga 905  
Ile Ala Tyr Pro His Glu Val Val Arg Thr Arg Leu Arg Glu Glu Gly  
217 222 227 232

aca aaa tac aga tct ttt ttt cag act cta tct ttg ctt gtt caa gaa 953  
Thr Lys Tyr Arg Ser Phe Phe Gln Thr Leu Ser Leu Leu Val Gln Glu  
233 238 243 248

gaa ggt tat ggg tct ctt tat cgt ggt ctg aca act cat cta gtg aga 1001  
Glu Gly Tyr Gly Ser Leu Tyr Arg Gly Leu Thr Thr His Leu Val Arg  
249 254 259 264

cag att cca aac aca gcc att atg atg gcc acc tat gaa ttg gtg gtt 1049  
Gln Ile Pro Asn Thr Ala Ile Met Met Ala Thr Tyr Glu Leu Val Val  
265 270 275 280

tac cta ctc aat gga tag cagcac gaggactgct gtactgcaaa aaaagaagac 1103  
Tyr Leu Leu Asn Gly \*  
281 286

caaaagatta cagtggacca tgggatacag aagccagcat ggcagacaga agaaaaatag 1163

tttggaaca tgtaactatt ctaagtggaa gttttgttgt aggaattata gtaatcacac 1223

cacattactt ggcccttcgg taatgtgaaa aaaaaaaaaa 1262

<210> 209  
<211> 2038  
<212> DNA  
<213> Homo sapiens

<220>  
<221> CDS  
<222> (102) .. (1364)

<400> 209  
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gttcccgac tgggtggctgg tctgcagggt tgacctgcgc a atg cag agg ctg 113  
Met Gln Arg Leu  
1

cag gta gtg ctg ggc cac ctg agg ggt ccg gcc gat tcc ggc tgg atg 161  
Gln Val Val Leu Gly His Leu Arg Gly Pro Ala Asp Ser Gly Trp Met  
5 10 15 20

ccg cag gcc gcg cct tgc ctg agc ggt gcc ccg cag gcc tcg gcc gcg 209  
Pro Gln Ala Ala Pro Cys Leu Ser Gly Ala Pro Gln Ala Ser Ala Ala  
21 26 31 36

gat	gtg	gtg	gtg	gtg	cac	ggg	cgg	cgc	acg	gcc	atc	tgc	cgg	gcg	ggc	257
Asp	Val	Val	Val	Val	His	Gly	Arg	Arg	Thr	Ala	Ile	Cys	Arg	Ala	Gly	
37					42					47					52	
/																
cgc	ggc	ggc	ttc	aag	gac	acc	acc	ccc	gac	gag	ctt	ctc	tcg	gca	gtc	305
Arg	Gly	Gly	Phe	Lys	Asp	Thr	Thr	Pro	Asp	Glu	Leu	Leu	Ser	Ala	Val	
53					58					63					68	
atg	acc	gcg	gtt	ctc	aag	gac	gtg	aat	ctg	agg	ccg	gaa	cag	ctg	ggg	353
Met	Thr	Ala	Val	Leu	Lys	Asp	Val	Asn	Leu	Arg	Pro	Glu	Gln	Leu	Gly	
69					74					79					84	
gac	atc	tgt	gtc	gga	aat	gtg	ctg	cag	cct	ggg	gcc	ggg	gca	atc	atg	401
Asp	Ile	Cys	Val	Gly	Asn	Val	Leu	Gln	Pro	Gly	Ala	Gly	Ala	Ile	Met	
85					90					95					100	
gcc	cga	atc	gcc	cag	ttt	ctg	agt	gac	atc	ccg	gag	act	gtg	cct	ttg	449
Ala	Arg	Ile	Ala	Gln	Phe	Leu	Ser	Asp	Ile	Pro	Glu	Thr	Val	Pro	Leu	
101					106					111					116	
tcc	act	gtc	aat	aga	cag	tgt	tcg	tcg	ggg	cta	cag	gca	gtg	gcc	agc	497
Ser	Thr	Val	Asn	Arg	Gln	Cys	Ser	Ser	Gly	Leu	Gln	Ala	Val	Ala	Ser	
117					122					127					132	
ata	gca	ggg	ggc	atc	aga	aat	ggg	tct	tat	gac	att	ggc	atg	gcc	tgt	545
Ile	Ala	Gly	Gly	Ile	Arg	Asn	Gly	Ser	Tyr	Asp	Ile	Gly	Met	Ala	Cys	
133					138					143					148	
ggg	gtg	gag	tcc	atg	tcc	ctg	gct	gac	aga	ggg	aac	cct	gga	aat	att	593
Gly	Val	Glu	Ser	Met	Ser	Leu	Ala	Asp	Arg	Gly	Asn	Pro	Gly	Asn	Ile	
149					154					159					164	
act	tcg	cgc	ttg	atg	gag	aag	gag	aag	gcc	aga	gat	tgc	ctg	att	cct	641
Thr	Ser	Arg	Leu	Met	Glu	Lys	Glu	Lys	Ala	Arg	Asp	Cys	Leu	Ile	Pro	
165					170					175					180	
atg	ggg	ata	acc	tct	gag	aat	gtg	gct	gag	cgg	ttt	ggc	att	tca	cgg	689
Met	Gly	Ile	Thr	Ser	Glu	Asn	Val	Ala	Glu	Arg	Phe	Gly	Ile	Ser	Arg	
181					186					191					196	
gag	aag	cag	gat	acc	ttt	gcc	ctg	gct	tcc	cag	cag	aag	gca	gca	aga	737
Glu	Lys	Gln	Asp	Thr	Phe	Ala	Leu	Ala	Ser	Gln	Gln	Lys	Ala	Ala	Arg	
197					202					207					212	
gcc	cag	agc	aag	ggc	tgt	ttc	caa	gct	gag	att	gtg	cct	gtg	acc	acc	785
Ala	Gln	Ser	Lys	Gly	Cys	Phe	Gln	Ala	Glu	Ile	Val	Pro	Val	Thr	Thr	
213					218					223					228	
acg	gtc	cat	gat	gac	aag	ggc	acc	aag	agg	agc	atc	act	gtg	acc	cag	833
Thr	Val	His	Asp	Asp	Lys	Gly	Thr	Lys	Arg	Ser	Ile	Thr	Val	Thr	Gln	
229					234					239					244	
gat	gag	ggg	atc	cgc	ccc	agc	acc	acc	atg	gag	ggc	ctg	gcc	aaa	ctg	881
Asp	Glu	Gly	Ile	Arg	Pro	Ser	Thr	Thr	Met	Glu	Gly	Leu	Ala	Lys	Leu	
245					250					255					260	
aag	cct	gcc	ttc	aag	aaa	gat	ggg	tct	acc	aca	gct	gga	aac	tct	agc	929

Lys	Pro	Ala	Phe	Lys	Lys	Asp	Gly	Ser	Thr	Thr	Ala	Gly	Asn	Ser	Ser	
261					266					271					276	
cag	gtg	agt	gat	ggg	gca	gct	gcc	atc/ctg	ctg	gcc	cgg	agg	tcc	aag		977
Gln	Val	Ser	Asp	Gly	Ala	Ala	Ala	Ile	Leu	Leu	Ala	Arg	Arg	Ser	Lys	
277					282					287					292	
gca	gaa	gag	ttg	ggc	ctt	ccc	atc	ctt	ggg	gtc	ctg	agg	tct	tat	gca	1025
Ala	Glu	Glu	Leu	Gly	Leu	Pro	Ile	Leu	Gly	Val	Leu	Arg	Ser	Tyr	Ala	
293					298					303					308	
gtg	gtt	ggg	gtc	cca	cct	gac	atc	atg	ggc	att	gga	cct	gcc	tat	gcc	1073
Val	Val	Gly	Val	Pro	Pro	Asp	Ile	Met	Gly	Ile	Gly	Pro	Ala	Tyr	Ala	
309					314					319					324	
atc	cca	gta	gct	ttg	caa	aaa	gca	ggg	ctg	aca	gtg	agt	gac	gtg	gac	1121
Ile	Pro	Val	Ala	Leu	Gln	Lys	Ala	Gly	Leu	Thr	Val	Ser	Asp	Val	Asp	
325					330					335					340	
atc	ttc	gag	atc	aat	gag	gcc	ttt	gca	agc	cag	gct	gcc	tac	tgt	gtg	1169
Ile	Phe	Glu	Ile	Asn	Glu	Ala	Phe	Ala	Ser	Gln	Ala	Ala	Tyr	Cys	Val	
341					346					351					356	
gag	aag	cta	cga	ctc	ccc	cct	gag	aag	gtg	aac	ccc	ctg	ggg	ggg	gca	1217
Glu	Lys	Leu	Arg	Leu	Pro	Pro	Glu	Lys	Val	Asn	Pro	Leu	Gly	Gly	Ala	
357					362					367					372	
gtg	gcc	tta	ggg	cac	cca	ctg	ggc	tgc	act	ggg	gca	cga	cag	gtc	atc	1265
Val	Ala	Leu	Gly	His	Pro	Leu	Gly	Cys	Thr	Gly	Ala	Arg	Gln	Val	Ile	
373					378					383					388	
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Thr	Leu	Pro	Ser	Cys	Trp	Pro	Gly	Val	Gln	Gly	Arg	Arg	Val	Gly	Pro	
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Ser	His	Pro	Trp	Gly	Pro	Glu	Val	Leu	Cys	Ser	Gly	Trp	Gly	Pro	Thr	
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 Met Ala Lys Lys Val Ala Val Ile Gly Ala Gly Val  
 1 5 10  
 agt ggc cta att tct ctg aag tgc tgt gtg gat gag gga ctt gag ccc 216  
 Ser Gly Leu Ile Ser Leu Lys Cys Cys Val Asp Glu Gly Leu Glu Pro  
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 Thr Cys Phe Glu Arg Thr Glu Asp Ile Gly Gly Val Trp Arg Phe Lys  
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 Glu Asn Val Glu Asp Gly Arg Ala Ser Ile Tyr Gln Ser Val Val Thr  
 45 50 55 60  
 aac acc agc aaa gaa atg tcc tgt ttc agt gac ttt cca atg oct gaa 360  
 Asn Thr Ser Lys Glu Met Ser Cys Phe Ser Asp Phe Pro Met Pro Glu  
 61 66 71 76  
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 Asp Phe Pro Asn Phe Leu His Asn Ser Lys Leu Leu Glu Tyr Phe Arg  
 77 82 87 92  
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 Ile Phe Ala Lys Lys Phe Asp Leu Leu Lys Tyr Ile Gln Phe Gln Thr  
 93 98 103 108  
 act gtc ctt agt gtg aga aaa tgt cca gat ttc tca tcc tct ggc caa 504  
 Thr Val Leu Ser Val Arg Lys Cys Pro Asp Phe Ser Ser Ser Gly Gln  
 109 114 119 124

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Trp Lys Val Val Thr Gln Ser Asn Gly Lys Glu Gln Ser Ala Val Phe	
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Asp Ala Val Met Val Cys Ser Gly His His Ile Leu Pro His Ile Pro	
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Leu Lys Ser Phe Pro Gly Met Glu Arg Phe Lys Gly Gln Tyr Phe His	
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Ser Arg Gln Tyr Lys His Pro Asp Gly Phe Glu Gly Lys Arg Ile Leu	
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Val Ile Gly Met Gly Asn Ser Gly Ser Asp Ile Ala Val Glu Leu Ser	
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Lys Asn Ala Ala Gln Val Phe Ile Ser Thr Arg His Gly Thr Trp Val	
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Met Ser Arg Ile Ser Glu Asp Gly Tyr Pro Trp Asp Ser Val Phe His	
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Thr Arg Phe Arg Ser Met Leu Arg Asn Val Leu Pro Arg Thr Ala Val	
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Lys Trp Met Ile Glu Gln Gln Met Asn Arg Trp Phe Asn His Glu Asn	
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Tyr Gly Leu Glu Pro Gln Asn Lys Tyr Ile Met Lys Glu Pro Val Leu	
269 274 279 284	
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Asn Asp Asp Val Pro Ser Arg Leu Leu Cys Gly Ala Ile Lys Val Lys	
285 290 295 300	
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Ser Thr Val Lys Glu Leu Thr Glu Thr Ser Ala Ile Phe Glu Asp Gly	
301 306 311 316	
aca gtg gag gag aac att gat gtc atc att ttt gca aca gga tat agt	1128
Thr Val Glu Glu Asn Ile Asp Val Ile Ile Phe Ala Thr Gly Tyr Ser	
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Phe Ser Phe Pro Phe Leu Glu Asp Ser Leu Val Lys Val Glu Asn Asn	
333 338 343 348	
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Met Val Ser Leu Tyr Lys Tyr Ile Phe Pro Ala His Leu Asp Lys Ser	
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Thr Leu Ala Cys Ile Gly Leu Ile Gln Pro Leu Gly Ser Ile Phe Pro	
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Thr Ala Glu Leu Gln Ala Arg Trp Val Thr Arg Val Phe Lys Gly Leu	
381 386 391 396	
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Cys Ser Leu Pro Ser Glu Arg Thr Met Met Met Asp Ile Ile Lys Arg	
397 402 407 412	
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Asn Glu Lys Arg Ile Asp Leu Phe Gly Glu Ser Gln Ser Gln Thr Leu	
413 418 423 428	
cag acc aat tat gtt gac tac ttg gac gag ctc gcc tta gag ata ggt	1464
Gln Thr Asn Tyr Val Asp Tyr Leu Asp Glu Leu Ala Leu Glu Ile Gly	
429 434 439 444	
gcg aag cca gat ttc tgc tct ctc ttg ttc aaa gat cct aaa ctg gct	1512
Ala Lys Pro Asp Phe Cys Ser Leu Leu Phe Lys Asp Pro Lys Leu Ala	
445 450 455 460	
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Val Arg Leu Tyr Phe Gly Pro Cys Asn Ser Tyr *	
461 466 471	
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Met Ala Thr	
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gca ttg gtg agt gcc cat tcc ctg gct ccc ctg aat ctg aag aag gag	342
Ala Leu Val Ser Ala His Ser Leu Ala Pro Leu Asn Leu Lys Lys Glu	
4 9 14 19	
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Gly Leu Arg Val Val Arg Glu Asp His Tyr Ser Thr Trp Glu Gln Gly	
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Phe Lys Leu Gln Gly Asn Ser Lys Gly Leu Gly Gln Glu Pro Leu Cys	
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Lys Gln Phe Arg Gln Leu Arg Tyr Glu Glu Thr Thr Gly Pro Arg Glu	
52 57 62 67	
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Ala Leu Ser Arg Leu Arg Glu Leu Cys Gln Gln Trp Leu Gln Pro Glu	
68 73 78 83	
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Thr His Thr Lys Glu Gln Ile Leu Glu Leu Leu Val Leu Glu Gln Phe	
84 89 94 99	
ctg atc atc ctg cct aag gag ctc cag gcc cgg gtg cag gag cat cac	630
Leu Ile Ile Leu Pro Lys Glu Leu Gln Ala Arg Val Gln Glu His His	
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Pro Glu Ser Arg Glu Asp Val Val Val Val Leu Glu Asp Leu Gln Leu	
116 121 126 131	
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Asp Leu Gly Glu Thr Gly Gln Gln Val Asp Pro Asp Gln Pro Lys Lys	
132 137 142 147	
caa aaa ata ctt gtg gag gag atg gcc cct ctg aaa gga gta cag gaa	774
Gln Lys Ile Leu Val Glu Glu Met Ala Pro Leu Lys Gly Val Gln Glu	
148 153 158 163	
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Gln Gln Val Arg His Glu Cys Glu Val Thr Lys Pro Glu Lys Glu Lys	

164	169	174	179	
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Gly Glu Glu Thr Arg Ile Glu Asn Gly Lys Leu Ile Val Val Thr Asp				
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tct tgt gga aga gta gag tca tct ggg aaa ata tct gaa ccc atg gag				918
Ser Cys Gly Arg Val Glu Ser Ser Gly Lys Ile Ser Glu Pro Met Glu				
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gct cat aat gag ggc tct aac ttg gaa agg cat cag gcc aag ccc aaa				966
Ala His Asn Glu Gly Ser Asn Leu Glu Arg His Gln Ala Lys Pro Lys				
212	217	222	227	
gag aag att gag tat aaa tgc tca gaa cgt gag cag aga ttc atc cag				1014
Glu Lys Ile Glu Tyr Lys Cys Ser Glu Arg Glu Gln Arg Phe Ile Gln				
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cac ttg gac ctg att gaa cat gcg agt aca cac acg gga aag aaa tcc				1062
His Leu Asp Leu Ile Glu His Ala Ser Thr His Thr Gly Lys Lys Ser				
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tgc gag tct gat gtg tgt cag agt tcc agt ctt aca gga cat aag aaa				1110
Cys Glu Ser Asp Val Cys Gln Ser Ser Ser Leu Thr Gly His Lys Lys				
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gtc ctc tct aga gag aaa ggt cat cag tgt cat gag tgt ggg aaa gcc				1158
Val Leu Ser Arg Glu Lys Gly His Gln Cys His Glu Cys Gly Lys Ala				
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Phe Gln Arg Ser Ser His Leu Val Arg His Gln Lys Ile His Leu Gly				
292	297	302	307	
gag aag cct tat cag tgc aat gag tgt ggc aaa gtc ttt agc cag aat				1254
Glu Lys Pro Tyr Gln Cys Asn Glu Cys Gly Lys Val Phe Ser Gln Asn				
308	313	318	323	
gca ggc ctt ttg gaa cat ctc aga att cat act gga gag aaa cct tat				1302
Ala Gly Leu Leu Glu His Leu Arg Ile His Thr Gly Glu Lys Pro Tyr				
324	329	334	339	
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Leu Cys Ile His Cys Gly Lys Asn Phe Arg Ser Ser His Leu Asn				
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Arg His Gln Arg Ile His Ser Gln Glu Glu Pro Cys Glu Cys Lys Glu				
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Cys Gly Lys Thr Phe Ser Gln Ala Leu Leu Leu Thr His His Gln Arg				
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Ile His Ser His Ser Lys Ser His Gln Cys Asn Glu Cys Gly Lys Ala				
388	393	398	403	

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Phe Ser Leu Thr Ser Asp Leu Ile Arg His His Arg Ile His Thr Gly	
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Ser His Leu Ala Gln His Val Arg Ile His Asn Glu Glu Lys Pro Tyr	
436 441 446 451	
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Gln Cys Ser Glu Cys Gly Glu Ala Phe Arg Gln Arg Ser Gly Leu Phe	
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Gln His Gln Arg Tyr His His Lys Asp Lys Leu Ala *	
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2843

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Met Arg  
1

ctg ttc gtg agt gat ggc gtc ccg ggt tgc ttg ccg gtg ctg gcc gcc 163  
Leu Phe Val Ser Asp Gly Val Pro Gly Cys Leu Pro Val Leu Ala Ala  
3 8 13 18

gcc ggg aga gcc cgg ggc aga gca gag gtg ctc atc agc act gta ggc 211  
Ala Gly Arg Ala Arg Gly Arg Ala Glu Val Leu Ile Ser Thr Val Gly  
19 24 29 34

ccg gaa gat tgt gtg gtc ccg ttc ctg acc cgg cct aag gtc cct gtc 259  
Pro Glu Asp Cys Val Val Pro Phe Leu Thr Arg Pro Lys Val Pro Val  
35 40 45 50

ttg cag ctg gat agc ggc aac tac ctc ttc tcc act agt gca atc tgc 307  
Leu Gln Leu Asp Ser Gly Asn Tyr Leu Phe Ser Thr Ser Ala Ile Cys  
51 56 61 66

cga tat ttt ttt ttg tta tct ggc tgg gag caa gat gac ctc act aac 355  
Arg Tyr Phe Phe Leu Leu Ser Gly Trp Glu Gln Asp Asp Leu Thr Asn  
67 72 77 82

cag tgg ctg gaa tgg gaa gcg aca gag ctg cag cca gct ttg tct gct 403  
Gln Trp Leu Glu Trp Glu Ala Thr Glu Leu Gln Pro Ala Leu Ser Ala  
83 88 93 98

gcc ctg tac tat tta gtg gtc caa ggc aag aag ggg gaa gat gtt ctt 451  
Ala Leu Tyr Tyr Leu Val Val Gln Gly Lys Lys Gly Glu Asp Val Leu  
99 104 109 114

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Gly Ser Val Arg Arg Ala Leu Thr His Ile Asp His Ser Leu Ser Arg  
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131 136 141 146

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Val Leu Trp Gly Ala Leu Tyr Pro Leu Leu Gln Asp Pro Ala Tyr Leu	
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Pro Glu Glu Leu Ser Ala Leu His Ser Trp Phe Gln Thr Leu Ser Thr	
163 168 173 178	
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Gln Glu Pro Cys Gln Arg Ala Ala Glu Thr Val Leu Lys Gln Gln Gly	
179 184 189 194	
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Val Leu Ala Leu Arg Pro Tyr Leu Gln Lys Gln Pro Gln Pro Ser Pro	
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Ala Glu Gly Arg Ala Val Thr Asn Glu Pro Glu Glu Glu Glu Leu Ala	
211 216 221 226	
acc cta tct gag gag gag att gct atg gct gtt act gct tgg gag aag	835
Thr Leu Ser Glu Glu Glu Ile Ala Met Ala Val Thr Ala Trp Glu Lys	
227 232 237 242	
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Gly Leu Glu Ser Leu Pro Pro Leu Arg Pro Gln Gln Asn Pro Val Leu	
243 248 253 258	
cct gtg gct gga gaa agg aat gtg ctc atc acc agt gcc ctc cct tac	931
Pro Val Ala Gly Glu Arg Asn Val Leu Ile Thr Ser Ala Leu Pro Tyr	
259 264 269 274	
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Val Asn Asn Val Pro His Leu Gly Asn Ile Ile Gly Cys Val Leu Ser	
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Ala Asp Val Phe Ala Arg Tyr Ser Arg Leu Arg Gln Trp Asn Thr Leu	
291 296 301 306	
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Tyr Leu Cys Gly Thr Asp Glu Tyr Gly Thr Ala Thr Glu Thr Lys Ala	
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Ile His Ala Asp Ile Tyr Arg Trp Phe Asn Ile Ser Phe Asp Ile Phe	
339 344 349 354	
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Gly Arg Thr Thr Thr Pro Gln Gln Thr Lys Ile Thr Gln Asp Ile Phe	
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Leu	Arg	Cys	Glu	His	Cys	Ala	Arg	Phe	Leu	Ala	Asp	Arg	Phe	Val	Glu		
387					392					397					402		
ggc	gtg	tgt	ccc	ttc	tgt	ggc	tat	gag	gag	gct	cgg	ggg	gac	cag	tgt	1363	
Gly	Val	Cys	Pro	Phe	Cys	Gly	Tyr	Glu	Glu	Ala	Arg	Gly	Asp	Gln	Cys		
403					408					413					418		
gac	aag	tgt	ggc	aag	ctc	atc	aat	gct	gtc	gag	ctt	aag	aag	cct	cag	1411	
Asp	Lys	Cys	Gly	Lys	Leu	Ile	Asn	Ala	Val	Glu	Leu	Lys	Lys	Pro	Gln		
419					424					429					434		
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Cys	Lys	Val	Cys	Arg	Ser	Cys	Pro	Val	Val	Gln	Ser	Ser	Gln	His	Leu		
435					440					445					450		
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Ser	His	Leu	Ile	Ala	Thr	Glu	Tyr	Leu	Asn	Tyr	Glu	Asp	Gly	Lys	Phe		
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819	824	829	834	





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gcc ggg aga gcc cgg ggc aga gca gag gtg ctc atc agc act gta ggc      211
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aac tac aca gac cag	tgg gag aga tgg tgg aag aac cca gag caa gcc			1747
Asn Tyr Thr Asp Gln	Trp Glu Arg Trp Trp Lys Asn Pro Glu Gln Ala			
531	536	541	546	
cta gga gct gag gat	aac tat acc ttg gtc agc cac ctc att gct aca			1795
Leu Gly Ala Glu Asp	Asn Tyr Thr Leu Val Ser His Leu Ile Ala Thr			
547	552	557	562	
gag tac ctg aac tat	gag gat ggg aaa ttc tct aag agc cgc ggt gtg			1843
Glu Tyr Leu Asn Tyr	Glu Asp Gly Lys Phe Ser Lys Ser Arg Gly Val			
563	568	573	578	
gga gtg ttt ggg gac	atg gcc cag gac acg ggg atc cct gct gac atc			1891
Gly Val Phe Gly Asp	Met Ala Gln Asp Thr Gly Ile Pro Ala Asp Ile			
579	584	589	594	
tgg cgc ttc tat ctg	ctg tac att cgg cct gag ggc cag gac agt gct			1939
Trp Arg Phe Tyr Leu	Leu Tyr Ile Arg Pro Glu Gly Gln Asp Ser Ala			
595	600	605	610	
ttc tcc tgg acg gac	ctg ctg ctg aag aat aat tct gag ctg ctt aac			1987
Phe Ser Trp Thr Asp	Leu Leu Leu Lys Asn Asn Ser Glu Leu Leu Asn			
611	616	621	626	



aac ctg ggc aac ttc atc aac aga gct ggg atg ttt gtg tct aag ttc	2035
Asn Leu Gly Asn Phe Ile Asn Arg Ala Gly Met Phe Val Ser Lys Phe	
627 632 637 642	
ttt ggg ggc tat gtg cct gag atg gtg ctc acc cct gat gat cag cgc	2083
Phe Gly Gly Tyr Val Pro Glu Met Val Leu Thr Pro Asp Asp Gln Arg	
643 648 653 658	
ctg ctg gcc cat gtc acc ctg gag ctc cag cac tat cac cag cta ctt	2131
Leu Leu Ala His Val Thr Leu Glu Leu Gln His Tyr His Gln Leu Leu	
659 664 669 674	
gag aag gtt cgg atc cgg gat gcc ttg cgc agt atc ctc acc ata tct	2179
Glu Lys Val Arg Ile Arg Asp Ala Leu Arg Ser Ile Leu Thr Ile Ser	
675 680 685 690	
cga cat ggc aac caa tat att cag gtg aat gag ccc tgg aag cgg att	2227
Arg His Gly Asn Gln Tyr Ile Gln Val Asn Glu Pro Trp Lys Arg Ile	
691 696 701 706	
aaa ggc agt gag gct gac agg caa cgg gca gga aca gtg act ggc ttg	2275
Lys Gly Ser Glu Ala Asp Arg Gln Arg Ala Gly Thr Val Thr Gly Leu	
707 712 717 722	
gca gtg aat ata gct gcc ttg ctc tct gtc atg ctt cag cct tac atg	2323
Ala Val Asn Ile Ala Ala Leu Leu Ser Val Met Leu Gln Pro Tyr Met	
723 728 733 738	
ccc acg gtt agt gcc aca atc cag gcc cag ctg cag ctc cca cct cca	2371
Pro Thr Val Ser Ala Thr Ile Gln Ala Gln Leu Gln Leu Pro Pro Pro	
739 744 749 754	
gcc tgc agt atc ctg ctg aca aac ttc ctg tgt acc tta cca gca gga	2419
Ala Cys Ser Ile Leu Leu Thr Asn Phe Leu Cys Thr Leu Pro Ala Gly	
755 760 765 770	
cac cag att ggc aca gtc agt ccc ttg ttc caa aaa ttg gaa aat gac	2467
His Gln Ile Gly Thr Val Ser Pro Leu Phe Gln Lys Leu Glu Asn Asp	
771 776 781 786	
cag att gaa agt tta agg cag cgc ttt gga ggg ggc cag gca aaa acg	2515
Gln Ile Glu Ser Leu Arg Gln Arg Phe Gly Gly Gly Gln Ala Lys Thr	
787 792 797 802	
tcc ctg aag cca gca gtt gta gag act gtt aca aca gcc aag cca cag	2563
Ser Leu Lys Pro Ala Val Val Glu Thr Val Thr Thr Ala Lys Pro Gln	
803 808 813 818	
cag ata caa gcg ctg atg gat gaa gtg aca aaa caa gga aac att gtc	2611
Gln Ile Gln Ala Leu Met Asp Glu Val Thr Lys Gln Gly Asn Ile Val	
819 824 829 834	
cga gaa ctg aaa gca caa aag gca gac aag aac gag gtt gct gcg gag	2659
Arg Glu Leu Lys Ala Gln Lys Ala Asp Lys Asn Glu Val Ala Ala Glu	
835 840 845 850	



67	72	77	82	
cag tgg ctg gaa tgg gaa gcg aca gag ctg	cag cca gct ttg tct gct	403		
Gln Trp Leu Glu Trp Glu Ala Thr Glu Leu Gln Pro Ala Leu Ser Ala				
83	88	93	98	
gcc ctg tac tat tta gtg gtc caa ggc aag aag ggg gaa gat gtt ctt	451			
Ala Leu Tyr Tyr Leu Val Val Gln Gly Lys Lys Gly Glu Asp Val Leu				
99	104	109	114	
ggg tca gtg cgg aga gcc ctg act cac att gac cac agc ttg agt cgt	499			
Gly Ser Val Arg Arg Ala Leu Thr His Ile Asp His Ser Leu Ser Arg				
115	120	125	130	
cag aac tgt cct ttc ctg gct ggg gag aca gaa tct cta gcc gac att	547			
Gln Asn Cys Pro Phe Leu Ala Gly Glu Thr Glu Ser Leu Ala Asp Ile				
131	136	141	146	
gtt ttg tgg gga gcc cta tac cca tta ctg caa gat ccc gcc tac ctc	595			
Val Leu Trp Gly Ala Leu Tyr Pro Leu Leu Gln Asp Pro Ala Tyr Leu				
147	152	157	162	
cct gag gag ctg agt gcc ctg cac agc tgg ttc cag aca ctg agt acc	643			
Pro Glu Glu Leu Ser Ala Leu His Ser Trp Phe Gln Thr Leu Ser Thr				
163	168	173	178	
cag gaa cca tgt cag cga gct gca gag act gta ctg aaa cag caa ggt	691			
Gln Glu Pro Cys Gln Arg Ala Ala Glu Thr Val Leu Lys Gln Gln Gly				
179	184	189	194	
gtc ctg gct ctc cgg cct tac ctc caa aag cag ccc cag ccc agc ccc	739			
Val Leu Ala Leu Arg Pro Tyr Leu Gln Lys Gln Pro Gln Pro Ser Pro				
195	200	205	210	
gct gag gga agg gct gtc acc aat gag cct gag gag gag gag ctg gct	787			
Ala Glu Gly Arg Ala Val Thr Asn Glu Pro Glu Glu Glu Glu Leu Ala				
211	216	221	226	
acc cta tct gag gag gag att gct atg gct gtt act gct tgg gag aag	835			
Thr Leu Ser Glu Glu Glu Ile Ala Met Ala Val Thr Ala Trp Glu Lys				
227	232	237	242	
ggc cta gaa agt ttg ccc ccg ctg cgg ccc cag cag aat cca gtg ttg	883			
Gly Leu Glu Ser Leu Pro Pro Leu Arg Pro Gln Gln Asn Pro Val Leu				
243	248	253	258	
cct gtg gct gga gaa agg aat gtg ctc atc acc agt gcc ctc cct tac	931			
Pro Val Ala Gly Glu Arg Asn Val Leu Ile Thr Ser Ala Leu Pro Tyr				
259	264	269	274	
gtc aac aat gtc ccc cac ctt ggg aac atc att ggt tgt gtg ctc agt	979			
Val Asn Asn Val Pro His Leu Gly Asn Ile Ile Gly Cys Val Leu Ser				
275	280	285	290	
gcc gat gtc ttt gcc agg tac tct cgc ctc cgc cag tgg aac acc ctc	1027			
Ala Asp Val Phe Ala Arg Tyr Ser Arg Leu Arg Gln Trp Asn Thr Leu				
291	296	301	306	

tat ctg tgt ggg aca gat gag tat ggt aca gca aca gag acc aag gct	1075
Tyr Leu Cys Gly Thr Asp Glu Tyr Gly Thr Ala Thr Glu Thr Lys Ala	
307 312 317 322	
ctg gag gag gga cta acc ccc cag gag atc tgc gac aag tac cac atc	1123
Leu Glu Glu Gly Leu Thr Pro Gln Glu Ile Cys Asp Lys Tyr His Ile	
323 328 333 338	
atc cat gct gac atc tac cgc tgg ttt aac att tcg ttt gat att ttt	1171
Ile His Ala Asp Ile Tyr Arg Trp Phe Asn Ile Ser Phe Asp Ile Phe	
339 344 349 354	
ggt cgc acc acc act cca cag cag acc aaa atc acc cag gac att ttc	1219
Gly Arg Thr Thr Thr Pro Gln Gln Thr Lys Ile Thr Gln Asp Ile Phe	
355 360 365 370	
cag cag ttg ctg aaa cga ggt ttt gtg ctg caa gat act gtg gag caa	1267
Gln Gln Leu Leu Lys Arg Gly Phe Val Leu Gln Asp Thr Val Glu Gln	
371 376 381 386	
ctg cga tgt gag cac tgt gct cgc ttc ctg gct gac cgc ttc gtg gag	1315
Leu Arg Cys Glu His Cys Ala Arg Phe Leu Ala Asp Arg Phe Val Glu	
387 392 397 402	
ggc gtg tgt ccc ttc tgt ggc tat gag gag gct cgg ggt gac cag tgt	1363
Gly Val Cys Pro Phe Cys Gly Tyr Glu Glu Ala Arg Gly Asp Gln Cys	
403 408 413 418	
gac aag tgt ggc aag ctc atc aat gct gtc gag ctt aag aag cct cag	1411
Asp Lys Cys Gly Lys Leu Ile Asn Ala Val Glu Leu Lys Lys Pro Gln	
419 424 429 434	
tgt aaa gtc tgc cga tca tgc cct gtg gtg cag tcg agc cag cac ctg	1459
Cys Lys Val Cys Arg Ser Cys Pro Val Val Gln Ser Ser Gln His Leu	
435 440 445 450	
ttt ctg gac ctg cct aag ctg gag aag cga ctg gag gag tgg ttg ggg	1507
Phe Leu Asp Leu Pro Lys Leu Glu Lys Arg Leu Glu Glu Trp Leu Gly	
451 456 461 466	
agg aca ttg cct ggc agt gac tgg aca ccc aat gcc cag ttt atc acc	1555
Arg Thr Leu Pro Gly Ser Asp Trp Thr Pro Asn Ala Gln Phe Ile Thr	
467 472 477 482	
cgt tct tgg ctt cgg gat ggc ctc aag cca cgc tgc ata acc cga gac	1603
Arg Ser Trp Leu Arg Asp Gly Leu Lys Pro Arg Cys Ile Thr Arg Asp	
483 488 493 498	
ctc aaa tgg gga acc cct gta ccc tta gaa ggt ttt gaa gac aag gta	1651
Leu Lys Trp Gly Thr Pro Val Pro Leu Glu Gly Phe Glu Asp Lys Val	
499 504 509 514	
ttc tat gtc tgg ttt gat gcc act att ggc tat ctg tcc atc aca gcc	1699
Phe Tyr Val Trp Phe Asp Ala Thr Ile Gly Tyr Leu Ser Ile Thr Ala	
515 520 525 530	

aac tac aca gac cag tgg gag aga tgg tgg aag aac cca gag caa gtg	1747
Asn Tyr Thr Asp Gln Trp Glu Arg Trp Trp Lys Asn Pro Glu Gln Val	
531 536 541 546	
gac ctg taf cag ttc atg gcc aaa gac aat gtt cct ttc cat agc tta	1795
Asp Leu Tyr Gln Phe Met Ala Lys Asp Asn Val Pro Phe His Ser Leu	
547 552 557 562	
gtc ttt cct tgc tca gcc cta gga gct gag gat aac tat acc ttg gtc	1843
Val Phe Pro Cys Ser Ala Leu Gly Ala Glu Asp Asn Tyr Thr Leu Val	
563 568 573 578	
agc cac ctc att gct aca gag tac ctg aac tat gag gat ggg aaa ttc	1891
Ser His Leu Ile Ala Thr Glu Tyr Leu Asn Tyr Glu Asp Gly Lys Phe	
579 584 589 594	
tct aag agc cgc ggt gtg gga gtg ttt ggg gac atg gcc cag gac acg	1939
Ser Lys Ser Arg Gly Val Gly Val Phe Gly Asp Met Ala Gln Asp Thr	
595 600 605 610	
ggg atc cct gct gac atc tgg cgc ttc tat ctg ctg tac att cgg cct	1987
Gly Ile Pro Ala Asp Ile Trp Arg Phe Tyr Leu Leu Tyr Ile Arg Pro	
611 616 621 626	
gag ggc cag gac agt gct ttc tcc tgg acg gac ctg ctg ctg aag aat	2035
Glu Gly Gln Asp Ser Ala Phe Ser Trp Thr Asp Leu Leu Leu Lys Asn	
627 632 637 642	
aat tct gag ctg ctt aac aac ctg ggc aac ttc atc aac aga gct ggg	2083
Asn Ser Glu Leu Leu Asn Asn Leu Gly Asn Phe Ile Asn Arg Ala Gly	
643 648 653 658	
atg ttt gtg tct aag ttc ttt ggg ggc tat gtg cct gag atg gtg ctc	2131
Met Phe Val Ser Lys Phe Phe Gly Gly Tyr Val Pro Glu Met Val Leu	
659 664 669 674	
acc cct gat gat cag cgc ctg ctg gcc cat gtc acc ctg gag ctc cag	2179
Thr Pro Asp Asp Gln Arg Leu Leu Ala His Val Thr Leu Glu Leu Gln	
675 680 685 690	
cac tat cac cag cta ctt gag aag gtt cgg atc cgg gat gcc ttg cgc	2227
His Tyr His Gln Leu Leu Glu Lys Val Arg Ile Arg Asp Ala Leu Arg	
691 696 701 706	
agt atc ctc acc ata tct cga cat ggc aac caa tat att cag gtg aat	2275
Ser Ile Leu Thr Ile Ser Arg His Gly Asn Gln Tyr Ile Gln Val Asn	
707 712 717 722	
gag ccc tgg aag cgg att aaa ggc agt gag gct gac agg caa cgg gca	2323
Glu Pro Trp Lys Arg Ile Lys Gly Ser Glu Ala Asp Arg Gln Arg Ala	
723 728 733 738	
gga aca gtg act ggc ttg gca gtg aat ata gct gcc ttg ctc tct gtc	2371
Gly Thr Val Thr Gly Leu Ala Val Asn Ile Ala Ala Leu Leu Ser Val	
739 744 749 754	
atg ctt cag cct tac atg ccc acg gtt agt gcc aca atc cag gcc cag	2419

Met Leu Gln Pro Tyr Met Pro Thr Val Ser Ala Thr Ile Gln Ala Gln	
755 760 765 770	
ctg cag ctc cca cct cca gcc tgc agt atc ctg ctg aca aac ttc ctg	2467
Leu Gln Leu Pro Pro Pro Ala Cys Ser Ile Leu Leu Thr Asn Phe Leu	
771 776 781 786	
tgt acc tta cca gca gga cac cag att ggc aca gtc agt ccc ttg ttc	2515
Cys Thr Leu Pro Ala Gly His Gln Ile Gly Thr Val Ser Pro Leu Phe	
787 792 797 802	
caa aaa ttg gaa aat gac cag att gaa agt tta agg cag cgc ttt gga	2563
Gln Lys Leu Glu Asn Asp Gln Ile Glu Ser Leu Arg Gln Arg Phe Gly	
803 808 813 818	
ggg ggc cag gca aaa acg tcc ctg aag cca gca gtt gta gag act gtt	2611
Gly Gly Gln Ala Lys Thr Ser Leu Lys Pro Ala Val Val Glu Thr Val	
819 824 829 834	
aca aca gcc aag cca cag cag ata caa gcg ctg atg gat gaa gtg aca	2659
Thr Thr Ala Lys Pro Gln Gln Ile Gln Ala Leu Met Asp Glu Val Thr	
835 840 845 850	
aaa caa gga aac ctc ttg gat cta aag aaa cag ttg gct gta gct gag	2707
Lys Gln Gly Asn Leu Leu Asp Leu Lys Lys Gln Leu Ala Val Ala Glu	
851 856 861 866	
ggg aaa ccc cct gaa gcc cct aaa ggc aag aag aaa aag taa aagacct	2756
Gly Lys Pro Pro Glu Ala Pro Lys Gly Lys Lys Lys Lys *	
867 872 877	
tggctcatag aaagtcactt taatagatag ggacagtaat aaataaatgt acaatctcta	2816
tatacaagct gagacctttc cttttgtcta ctccaagcct tccccctgcg tatgtgggat	2876
tgagggtcac atcattggca ctagtgagag ggtagtcagt agccacttct gggaaagggtg	2936
ggtagtgtgg cccaagtggg ggactgatgc tccaagtgc acgcggccgg atatttaata	2996
gtagtagtcg acccggaat tccggaccgg tacctgcaag gcgtaccagc tttccccaat	3056
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Val Asn Ala Ala Gly Gly Val Glu Val Tyr Ser Gly Asn Gln Arg Ile  
175 180 185 190

aag gtt tca aat acc ttg gaa agc cga ctg gat ctc tca gcc aag caa 1044  
Lys Val Ser Asn Thr Leu Glu Ser Arg Leu Asp Leu Ser Ala Lys Gln  
191 196 201 206

aag atg cca gaa ata cga atg gcc ttg ttt ggt gct aac acc aac aga 1092  
Lys Met Pro Glu Ile Arg Met Ala Leu Phe Gly Ala Asn Thr Asn Arg  
207 212 217 222

aag ttc ttt ata taa gcctctggga agtgaagcta gtgttgaacc actaaaccat 1147  
Lys Phe Phe Ile \*  
223

aaaagtttaa gttttttggg gaaaggaaac tagtagtggt tctctctctt tgatgctctg 1207

atactgttct gtttttcttc acgaaatacc ctttgatag ctaaagtgtt aactttgaaa 1267

taaagcccaa attaatgctc agaaaaaaaa aaaaa 1302

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aaggcgggtg aaaggctgcc tcccgagact ctcttgctt ggaattctgc ccactctgcg 120

gagttagcag tcacgacctc cagcacagg atg tgg tac cac aga ttg tcc cac 173  
Met Trp Tyr His Arg Leu Ser His  
1 5

cta cac agc agg ctt cag gac ttg ctg aag gga gga gtc ata tat ccg 221  
Leu His Ser Arg Leu Gln Asp Leu Leu Lys Gly Gly Val Ile Tyr Pro  
9 14 19 24

gcc ctt cca cag ccc aac ttc aaa agc tta ctt cct tta gct gtc cat 269  
Ala Leu Pro Gln Pro Asn Phe Lys Ser Leu Leu Pro Leu Ala Val His  
25 30 35 40

tgg cac cat aca gcc tcc aag tct ctg act tgt gct tgg cag caa cat 317  
Trp His His Thr Ala Ser Lys Ser Leu Thr Cys Ala Trp Gln Gln His  
41 46 51 56

gaa gat cat ttt gag ctg aaa tat gct aat acc gtg atg cgc ttt gat 365  
Glu Asp His Phe Glu Leu Lys Tyr Ala Asn Thr Val Met Arg Phe Asp



57	62	67	72	
tac gtc tgg ctt cga gac cac tgc cgc tca gca tgc tgc tac aac tct				413
Tyr Val Trp Leu Arg Asp His Cys Arg Ser Ala Ser Cys Tyr Asn Ser				
73	78	83	88	
aag act cac cag cgc agc ctg gat act gcc agt gtg gat tta tgt atc				461
Lys Thr His Gln Arg Ser Leu Asp Thr Ala Ser Val Asp Leu Cys Ile				
89	94	99	104	
aag cca aag acc att cgt ctg gat gag acc aca ctc ttt ttc act tgg				509
Lys Pro Lys Thr Ile Arg Leu Asp Glu Thr Thr Leu Phe Phe Thr Trp				
105	110	115	120	
cca gat ggt cat gtg act aaa tat gat ttg aat tgg ctg gtg aaa aac				557
Pro Asp Gly His Val Thr Lys Tyr Asp Leu Asn Trp Leu Val Lys Asn				
121	126	131	136	
agc tat gaa ggg cag aaa caa aaa gtc atc cag cct aga ata cta tgg				605
Ser Tyr Glu Gly Gln Lys Gln Lys Val Ile Gln Pro Arg Ile Leu Trp				
137	142	147	152	
aat gct gaa atc tac cag caa gcc caa gtt cca tgc gta gat tgc cag				653
Asn Ala Glu Ile Tyr Gln Gln Ala Gln Val Pro Ser Val Asp Cys Gln				
153	158	163	168	
agc ttc tta gaa acc aac gag gga ctg aag aag ttt ctg caa aac ttt				701
Ser Phe Leu Glu Thr Asn Glu Gly Leu Lys Lys Phe Leu Gln Asn Phe				
169	174	179	184	
ctg ctc tat gga att gca ttc gta gaa aat gtc cct ccc act caa gag				749
Leu Leu Tyr Gly Ile Ala Phe Val Glu Asn Val Pro Pro Thr Gln Glu				
185	190	195	200	
cac aca gag aag ttg gca gaa agg atc agc tta atc aga gaa acc att				797
His Thr Glu Lys Leu Ala Glu Arg Ile Ser Leu Ile Arg Glu Thr Ile				
201	206	211	216	
tat ggg agg atg tgg tat ttc act tca gac ttc tcc aga ggt gac act				845
Tyr Gly Arg Met Trp Tyr Phe Thr Ser Asp Phe Ser Arg Gly Asp Thr				
217	222	227	232	
gcg tac acc aag cta gct ctg gat cgg cac act gac act acc tat ttt				893
Ala Tyr Thr Lys Leu Ala Leu Asp Arg His Thr Asp Thr Thr Tyr Phe				
233	238	243	248	
caa gag ccc tgt ggc att caa gtg ttt cat tgt ctt aaa cat gaa gga				941
Gln Glu Pro Cys Gly Ile Gln Val Phe His Cys Leu Lys His Glu Gly				
249	254	259	264	
act ggt ggc agg aca ctg cta gta gat gga ttc tat gca gca gaa cag				989
Thr Gly Gly Arg Thr Leu Leu Val Asp Gly Phe Tyr Ala Ala Glu Gln				
265	270	275	280	
gta ctt caa aag gca cct gag gaa ttt gaa ctc ctc agt aaa gtg cca				1037
Val Leu Gln Lys Ala Pro Glu Glu Phe Glu Leu Leu Ser Lys Val Pro				
281	286	291	296	

ttg aag cat gaa tat att gaa gat gtt gga gaa tgt cac aac cac atg	1085
Leu Lys His Glu Tyr Ile Glu Asp Val Gly Glu Cys His Asn His Met	
297 302 307 312	
att ggg att ggg cca gtc tta aat atc tac cca tgg aat aaa gag ctg	1133
Ile Gly Ile Gly Pro Val Leu Asn Ile Tyr Pro Trp Asn Lys Glu Leu	
313 318 323 328	
tat ttg atc agg tac aac aac tat gac cgg gct gtc atc aat acc gtt	1181
Tyr Leu Ile Arg Tyr Asn Asn Tyr Asp Arg Ala Val Ile Asn Thr Val	
329 334 339 344	
cct tat gat gtc gtc cat cgc tgg tat aca gca cac cgg act cta acg	1229
Pro Tyr Asp Val Val His Arg Trp Tyr Thr Ala His Arg Thr Leu Thr	
345 350 355 360	
ata gag ttg agg aga cct gag aat gag ttt tgg gtc aaa cta aag cct	1277
Ile Glu Leu Arg Arg Pro Glu Asn Glu Phe Trp Val Lys Leu Lys Pro	
361 366 371 376	
ggc agg gtc cta ttt ata gac aac tgg cgt gtc cta cat ggc agg gaa	1325
Gly Arg Val Leu Phe Ile Asp Asn Trp Arg Val Leu His Gly Arg Glu	
377 382 387 392	
tgc ttc act ggc tac cgc caa ctg tgt ggc tgc tat tta aca aga gat	1373
Cys Phe Thr Gly Tyr Arg Gln Leu Cys Gly Cys Tyr Leu Thr Arg Asp	
393 398 403 408	
gat gta tta aac act gct cgc ctc ttg ggg ctt cag gct taa aattgac	1422
Asp Val Leu Asn Thr Ala Arg Leu Leu Gly Leu Gln Ala *	
409 414 419	
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<221> CDS

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gccaatattc aacagcgttc ttaaactgaa caagcatatc aaagagaatc ataaaaacat	180
tccottggcc ctgaattata tccacaatgg gaagaaatcc agggccttaa gcccctatc	240

tcctgtggcc atagagcaga catctcttaa g	atg atg cag gca gta gga ggt	292
	Met Met Gln Ala Val Gly Gly	
	1 5	
gca cct gca cgt ccc act gga gaa tat atc tgt aat caa tgt ggt gct	340	
Ala Pro Ala Arg Pro Thr Gly Glu Tyr Ile Cys Asn Gln Cys Gly Ala		
8 13 18 23		
aag tac aca tcc cta gac agc ttt cag act cac cta aaa act cat ctc	388	
Lys Tyr Thr Ser Leu Asp Ser Phe Gln Thr His Leu Lys Thr His Leu		
24 29 34 39		
gac act gtg ctt cca aaa ttg acc tgt cct cag tgc aac aag gaa ttc	436	
Asp Thr Val Leu Pro Lys Leu Thr Cys Pro Gln Cys Asn Lys Glu Phe		
40 45 50 55		
ccc aac caa gaa tcc ttg ctg aag cat gtt acc att cac ttt atg atc	484	
Pro Asn Gln Glu Ser Leu Leu Lys His Val Thr Ile His Phe Met Ile		
56 61 66 71		
act tca acg tat tac atc tgt gag agt tgt gac aag caa ttc aca tca	532	
Thr Ser Thr Tyr Tyr Ile Cys Glu Ser Cys Asp Lys Gln Phe Thr Ser		
72 77 82 87		
gtg gat gac ctt cag aaa cac ctg ctg gac atg cac acc ttt gtc ttc	580	
Val Asp Asp Leu Gln Lys His Leu Leu Asp Met His Thr Phe Val Phe		
88 93 98 103		
ttt cgc tgc acc ctc tgc cag gaa gtt ttt gac tca aaa gtc tcc att	628	
Phe Arg Cys Thr Leu Cys Gln Glu Val Phe Asp Ser Lys Val Ser Ile		
104 109 114 119		
cag ctc cac ttg gct gtg aag cac agt aac gaa aag aaa gtc tat agg	676	
Gln Leu His Leu Ala Val Lys His Ser Asn Glu Lys Lys Val Tyr Arg		
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His Val Lys His Asn His Leu Glu Asn Gln Gly Lys Val His Lys Cys		
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Ile Phe Cys Gly Glu Ser Phe Gly Thr Glu Val Glu Leu Gln Cys His		
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Ile Thr Thr His Ser Lys Lys Tyr Asn Cys Lys Phe Cys Ser Lys Ala		
184 189 194 199		
ttc cat gcg atc att ttg tta gaa aaa cac ttg cga gaa aaa cac tgt	916	
Phe His Ala Ile Ile Leu Leu Glu Lys His Leu Arg Glu Lys His Cys		
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Val Phe Glu Thr Lys Thr Pro Asn Cys Gly Thr Asn Gly Ala Ser Glu	
216 221 226 231	
caa gtg cag aaa gag gaa gtg gag ctg cag act ttg ctg acc aac agc	1012
Gln Val Gln Lys Glu Glu Val Glu Leu Gln Thr Leu Leu Thr Asn Ser	
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Gln Glu Ser His Asn Ser His Asp Gly Ser Glu Glu Asp Val Asp Thr	
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Ser Glu Pro Met Tyr Gly Cys Asp Ile Cys Gly Ala Ala Tyr Thr Met	
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Glu Thr Leu Leu Gln Asn His Gln Leu Arg Asp His Asn Ile Arg Pro	
280 285 290 295	
gga gaa agt gcc atc gtg aaa aag aaa gct gag ctc att aaa ggg aat	1204
Gly Glu Ser Ala Ile Val Lys Lys Lys Ala Glu Leu Ile Lys Gly Asn	
296 301 306 311	
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Tyr Lys Cys Asn Val Cys Ser Arg Thr Phe Phe Ser Glu Asn Gly Leu	
312 317 322 327	
cgg gaa cat atg cag acc cac cta ggc cct gtc aaa cac tac atg tgc	1300
Arg Glu His Met Gln Thr His Leu Gly Pro Val Lys His Tyr Met Cys	
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344 349 354 359	
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Lys Val Thr His Ser Lys Ser Leu Asp Thr Gly Asn Cys Arg Ile Cys	
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Lys Met Pro Leu Gln Ser Glu Glu Glu Phe Leu Glu His Cys Gln Met	
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His Pro Asp Leu Arg Asn Ser Leu Thr Gly Phe Arg Cys Val Val Cys	
392 397 402 407	
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Met Gln Thr Val Thr Ser Thr Leu Glu Leu Lys Ile His Gly Thr Phe	
408 413 418 423	
cac atg caa aag aca ggg aat ggg tct gca gtt cag acc aca ggg cgg	1588
His Met Gln Lys Thr Gly Asn Gly Ser Ala Val Gln Thr Thr Gly Arg	
424 429 434 439	
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Phe Arg Ser Lys Gln Asp Leu Val Lys Leu Asp Ile Asn Gly Leu Pro	
456 461 466 471	
tat ggt ctg tgt gcc ggc tgc gtg aat ctc agt aag agc gcc agc cca	1732
Tyr Gly Leu Cys Ala Gly Cys Val Asn Leu Ser Lys Ser Ala Ser Pro	
472 477 482 487	
ggc att aac gtc cct ccc ggc acg aat aga cca ggc ttg ggc cag aat	1780
Gly Ile Asn Val Pro Pro Gly Thr Asn Arg Pro Gly Leu Gly Gln Asn	
488 493 498 503	
gag aat ctg agt gcc att gag ggg aaa ggc aag gtg ggg gga ctg aag	1828
Glu Asn Leu Ser Ala Ile Glu Gly Lys Gly Lys Val Gly Gly Leu Lys	
504 509 514 519	
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Thr Arg Cys Ser Ser Cys Asn Val Lys Phe Glu Ser Glu Ser Glu Leu	
520 525 530 535	
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Gln Asn His Ile Gln Thr Ile His Arg Glu Leu Val Pro Asp Ser Asn	
536 541 546 551	
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Ser Thr Gln Leu Lys Thr Pro Gln Val Ser Pro Met Pro Arg Ile Ser	
552 557 562 567	
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Pro Ser Gln Ser Asp Glu Lys Lys Thr Tyr Gln Cys Ile Lys Cys Gln	
568 573 578 583	
atg gtt ttc tac aat gaa tgg gat att cag gtt cat gtt gca aat cac	2068
Met Val Phe Tyr Asn Glu Trp Asp Ile Gln Val His Val Ala Asn His	
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atg att gat gaa gga ctg aac cat gaa tgc aaa ctc tgc agc cag acc	2116
Met Ile Asp Glu Gly Leu Asn His Glu Cys Lys Leu Cys Ser Gln Thr	
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Phe Asp Ser Pro Ala Lys Leu Gln Cys His Leu Ile Glu His Ser Phe	
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Glu Gly Met Gly Gly Thr Phe Lys Cys Pro Val Cys Phe Thr Val Phe	
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Val Gln Ala Asn Lys Leu Gln Gln His Ile Phe Ser Ala His Gly Gln	
648 653 658 663	
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Glu Asp Lys Ile Tyr Asp Cys Thr Gln Cys Pro Gln Lys Phe Phe Phe	



gaa tgg ctt tat aag ttc agt gct gat gaa ttc ttc ata ccc cgg gaa	335
Glu Trp Leu Tyr Lys Phe Ser Ala Asp Glu Phe Phe Ile Pro Arg Glu	
95 100 105 110	
gtg aaa gta ctt agc att gat caa aga aat ttc aaa tta cga tca att	383
Val Lys Val Leu Ser Ile Asp Gln Arg Asn Phe Lys Leu Arg Ser Ile	
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Gly Trp Gly Glu Glu Phe Ser Leu Ser Lys His Pro Gln Gly Thr Glu	
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gtc aaa gca ata aca tat tca gca atg cag gtc tat aat gaa gag aac	479
Val Lys Ala Ile Thr Tyr Ser Ala Met Gln Val Tyr Asn Glu Glu Asn	
143 148 153 158	
ccg gaa gtt ttt gtg atc att gac att taa g acaccaaaaa ataaaagact	530
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Glu Pro Glu Pro Glu Ala Asp Tyr Tyr Ala Lys Glu Val Thr Arg Val	
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Thr His Ser Ile Tyr Met Phe Phe Asn Thr Ser Glu Leu Arg Glu Ala	
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Val Pro Glu Pro Val Leu Leu Ser Arg Ala Glu Leu Arg Leu Leu Arg	
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Leu Lys Leu Lys Val Glu Gln His Val Glu Leu Tyr Gln Lys Tyr Ser	
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Asn Asn Ser Trp Arg Tyr Leu Ser Asn Arg Leu Leu Ala Pro Ser Asp	
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192 197 202 207	



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Ser Cys Asp Ser Arg Asp Asn Thr Leu Gln Val Asp Ile Asn Gly Phe	
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Thr Thr Gly Arg Arg Gly Asp Leu Ala Thr Ile His Gly Met Asn Arg	
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Pro Phe Leu Leu Leu Met Ala Thr Pro Leu Glu Arg Ala Gln His Leu	
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Gln Ser Ser Arg His Arg Arg Ala Leu Asp Thr Asn Tyr Cys Phe Ser	
272 277 282 287	
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Ser Thr Glu Lys Asn Cys Cys Val Arg Gln Leu Tyr Ile Asp Phe Arg	
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Lys Asp Leu Gly Trp Lys Trp Ile His Glu Pro Lys Gly Tyr His Ala	
304 309 314 319	
aac ttc tgc ctc ggg ccc tgc ccc tac att tgg agc ctg gac acg cag	1846
Asn Phe Cys Leu Gly Pro Cys Pro Tyr Ile Trp Ser Leu Asp Thr Gln	
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tac agc aag gtc ctg gcc ctg tac aac cag cat aac ccg ggc gcc tgc	1894
Tyr Ser Lys Val Leu Ala Leu Tyr Asn Gln His Asn Pro Gly Ala Ser	
336 341 346 351	
gcg gcg ccg tgc tgc gtg ccg cag gcg ctg gag ccg ctg ccc atc gtg	1942
Ala Ala Pro Cys Cys Val Pro Gln Ala Leu Glu Pro Leu Pro Ile Val	
352 357 362 367	
tac tac gtg ggc cgc aag ccc aag gtg gag cag ctg tcc aac atg atc	1990
Tyr Tyr Val Gly Arg Lys Pro Lys Val Glu Gln Leu Ser Asn Met Ile	
368 373 378 383	
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Val Arg Ser Cys Lys Cys Ser *	
384 389	
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ac atg gaa aaa gat aaa cac agt cat ttc tac aac caa aaa agt gac 167  
Met Glu Lys Asp Lys His Ser His Phe Tyr Asn Gln Lys Ser Asp  
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Phe Arg Ile Glu His Ser Met Leu Glu Glu Leu Glu Asn Lys Leu Ile  
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cac agc agg aaa aca gaa aga gca aaa atc cag caa caa ttg gcc aaa 263  
His Ser Arg Lys Thr Glu Arg Ala Lys Ile Gln Gln Gln Leu Ala Lys  
32 37 42 47  
ata cat aat aat gta aag aaa ctt cag cat caa tta aaa gat gtg aag 311  
Ile His Asn Asn Val Lys Lys Leu Gln His Gln Leu Lys Asp Val Lys  
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Pro Thr Pro Asp Phe Val Glu Lys Leu Arg Glu Met Met Glu Glu Ile  
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Glu Leu Ile Lys Glu Glu Lys Thr Thr Asn Asn Glu Leu Ser Ala Ile	
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Ser Arg Lys Ile Asp Thr Trp Ala Leu Gly Asn Ser Glu Thr Glu Lys	
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Ala Phe Arg Ala Ile Ser Ser Lys Val Pro Val Asp Lys Val Thr Pro	
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Ser Thr Leu Pro Glu Glu Val Leu Asp Phe Glu Lys Phe Leu Gln Gln	
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Thr Gly Gly Arg Gln Gly Ala Trp Asp Asp Tyr Asp His Gln Asn Phe	
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Val Lys Val Arg Asn Lys His Lys Gly Lys Pro Thr Phe Met Glu Glu	
176 181 186 191	
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Val Leu Glu His Leu Pro Gly Lys Thr Gln Asp Glu Val Gln Gln His	
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Glu Lys Trp Tyr Gln Lys Phe Leu Ala Leu Glu Glu Arg Lys Lys Glu	
208 213 218 223	
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Ser Ile Gln Ile Trp Lys Thr Lys Lys Gln Gln Lys Arg Glu Glu Ile	
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Phe Lys Leu Lys Glu Lys Ala Asp Asn Thr Pro Val Leu Phe His Asn	
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272 277 282 287	
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Met Lys Cys Ala Ser Gln Leu Lys Glu Glu Glu Glu Lys Glu Lys Lys	
288 293 298 303	
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Ser Tyr Thr Gln Gln Lys Lys Glu Gln Glu Glu Phe Leu Arg Leu Glu	
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336 341 346 351	
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12 17 22 27  
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44 49 54 59  
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Leu Val Pro Trp Ser Gln Cys Leu Gln Asn Phe Leu Leu His Gly Thr  
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Lys Asn Val Thr Asn Ser Ser Ser Leu Arg Leu Pro Arg Gln Asn Ser  
76 81 86 91  
gat ggt ggt cag aaa aat aag cct cgt gaa cat att ata gac tgt gga 637  
Asp Gly Gly Gln Lys Asn Lys Pro Arg Glu His Ile Ile Asp Cys Gly  
92 97 102 107  
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Asp Ile Val Trp Ser Leu Ala Phe Gly Ser Ser Val Pro Glu Lys Gln  
108 113 118 123  
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Ser Arg Cys Val Asn Ile Glu Trp His Arg Phe Arg Phe Gly Gln Asp  
124 129 134 139  
cag cta ctt ctt gct aca ggg ttg aac aat ggg cgt atc aaa ata tgg 781  
Gln Leu Leu Leu Ala Thr Gly Leu Asn Asn Gly Arg Ile Lys Ile Trp  
140 145 150 155  
gat gta tat aca gga aaa ctc ctc ctt aac ttg gta gat cat act gaa 829  
Asp Val Tyr Thr Gly Lys Leu Leu Leu Asn Leu Val Asp His Thr Glu

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gtg gtc aga gat tta act ttt gct cca gat gga agc ttg atc ctg gtg				877
Val Val Arg Asp Leu Thr Phe Ala Pro Asp Gly Ser Leu Ile Leu Val				
172	177	182	187	
tca gct tca aga gac aaa act ctc aga gta tgg gac ctg aaa gat gat				925
Ser Ala Ser Arg Asp Lys Thr Leu Arg Val Trp Asp Leu Lys Asp Asp				
188	193	198	203	
gga aac atg atg aaa gta ttg agg ggg cat cag aat tgg gtg tac agc				973
Gly Asn Met Met Lys Val Leu Arg Gly His Gln Asn Trp Val Tyr Ser				
204	209	214	219	
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Cys Ala Phe Ser Pro Asp Ser Ser Met Leu Cys Ser Val Gly Ala Ser				
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aaa gca gtt ttc ctt tgg aat atg gat aaa tac acc atg ata cgg aaa				1069
Lys Ala Val Phe Leu Trp Asn Met Asp Lys Tyr Thr Met Ile Arg Lys				
236	241	246	251	
cta gaa gga cat cac cat gat gtg gta gct tgt gac ttt tct cct gat				1117
Leu Glu Gly His His His Asp Val Val Ala Cys Asp Phe Ser Pro Asp				
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gga gca tta ctg gct act gca tct tat gat act cga gta tat atc tgg				1165
Gly Ala Leu Leu Ala Thr Ala Ser Tyr Asp Thr Arg Val Tyr Ile Trp				
268	273	278	283	
gat cca cat aat gga gac att ctg atg gaa ttt ggg cac ctg ttt ccc				1213
Asp Pro His Asn Gly Asp Ile Leu Met Glu Phe Gly His Leu Phe Pro				
284	289	294	299	
cca cct act cca ata ttt gct gga gga gca aat gac cgg tgg gta cga				1261
Pro Pro Thr Pro Ile Phe Ala Gly Gly Ala Asn Asp Arg Trp Val Arg				
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Ser Val Ser Phe Ser His Asp Gly Leu His Val Ala Ser Leu Ala Asp				
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gat aaa atg gtg agg ttc tgg aga att gat gag gat tat cca gtg caa				1357
Asp Lys Met Val Arg Phe Trp Arg Ile Asp Glu Asp Tyr Pro Val Gln				
332	337	342	347	
gtt gca cct ttg agc aat ggt ctt tgc tgt gcc ttc tct act gat ggc				1405
Val Ala Pro Leu Ser Asn Gly Leu Cys Cys Ala Phe Ser Thr Asp Gly				
348	353	358	363	
agt gtt tta gct gct ggg aca cat gac gga agt gtg tat ttt tgg gcc				1453
Ser Val Leu Ala Ala Gly Thr His Asp Gly Ser Val Tyr Phe Trp Ala				
364	369	374	379	
act cca cgg cag gtc cct agc ctg caa cat tta tgt cgc atg tca atc				1501
Thr Pro Arg Gln Val Pro Ser Leu Gln His Leu Cys Arg Met Ser Ile				
380	385	390	395	



Ala	Ser	Gly	Ala	Tyr	Asn	Pro	Tyr	Ile	Glu	Ile	Ile	Glu	Gln	Pro	Arg		
2					7					12					17		
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Gln	Arg	Gly	Met	Arg	Phe	Arg	Tyr	Lys	Cys	Glu	Gly	Arg	Ser	Ala	Gly		
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Ile	Gln	Ile	Met	Asn	Tyr	Tyr	Gly	Lys	Gly	Lys	Val	Arg	Ile	Thr	Leu		
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Val	Thr	Lys	Asn	Asp	Pro	Tyr	Lys	Pro	His	Pro	His	Asp	Leu	Val	Gly		
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aaa	gac	tgc	aga	gac	ggc	tac	tat	gaa	gca	gaa	ttt	gga	caa	gaa	cgc	465	
Lys	Asp	Cys	Arg	Asp	Gly	Tyr	Tyr	Glu	Ala	Glu	Phe	Gly	Gln	Glu	Arg		
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98					103					108					113		
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Asn	Arg	Ala	Pro	Asn	Thr	Ala	Glu	Leu	Arg	Ile	Cys	Arg	Val	Asn	Lys		
178					183					188					193		
aat	tgt	gga	agt	gtc	aga	gga	gga	gat	gaa	ata	ttt	cta	ctt	tgt	gac	801	
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Lys	Val	Gln	Lys	Asp	Asp	Ile	Glu	Val	Arg	Phe	Val	Leu	Asn	Asp	Trp		
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gaa	gca	aaa	ggc	atc	ttt	tca	caa	gct	gat	gta	cac	cgt	caa	gta	gcc	897	
Glu	Ala	Lys	Gly	Ile	Phe	Ser	Gln	Ala	Asp	Val	His	Arg	Gln	Val	Ala		



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Ile Val Phe Lys Thr Pro Pro Tyr Cys Lys Ala Ile Thr Glu Pro Val				
242	247	252	257	
aca gta aaa atg cag ttg cgg aga cct tct gac cag gaa gtt agt gaa				993
Thr Val Lys Met Gln Leu Arg Arg Pro Ser Asp Gln Glu Val Ser Glu				
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Ser Met Asp Phe Arg Tyr Leu Pro Asp Glu Lys Asp Thr Tyr Gly Asn				
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Lys Ala Lys Lys Gln Lys Thr Thr Leu Leu Phe Gln Lys Leu Cys Gln				
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Asp His Val Asn Phe Pro Glu Arg Pro Arg Pro Gly Leu Leu Gly Ser				
306	311	316	321	
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Ile Gly Glu Gly Arg Tyr Phe Lys Lys Glu Pro Asn Leu Phe Ser His				
322	327	332	337	
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Asp Ala Val Val Arg Glu Met Pro Thr Gly Val Ser Ser Gln Ala Glu				
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tcc tac tat ccc tca cct ggg ccc atc tca agt gga ttg tca cat cat				1281
Ser Tyr Tyr Pro Ser Pro Gly Pro Ile Ser Ser Gly Leu Ser His His				
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Ala Ser Met Ala Pro Leu Pro Ser Ser Ser Trp Ser Ser Val Ala His				
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ccc acc cca cgc tca ggc aat aca aac cca ctg agt agt ttt tca aca				1377
Pro Thr Pro Arg Ser Gly Asn Thr Asn Pro Leu Ser Ser Phe Ser Thr				
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agg aca ctt cct tct aat tgc caa ggt atc cca cca ttc ctg aga ata				1425
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cct gtt ggg aat gat tta aat gct tct aat gct tgc att tac aac aat				1473
Pro Val Gly Asn Asp Leu Asn Ala Ser Asn Ala Cys Ile Tyr Asn Asn				
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gcc gat gac ata gtc gga atg gaa gcg tca tcc atg cca tca gca gat				1521
Ala Asp Asp Ile Val Gly Met Glu Ala Ser Ser Met Pro Ser Ala Asp				
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Leu Tyr Gly Ile Ser Asp Pro Asn Met Leu Ser Asn Cys Ser Val Asn				
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Pro Arg Asp Leu Arg Gln Leu His Gln Met Ser Ser Ser Ser Met Ser	
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Phe Glu Gly Ser Asp Phe Ser Cys Ala Asp Asn Ser Met Ile Asn Glu	
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546 551 556 561	
gat agt cag tat tca ggt att ggc agt atg caa aat gag caa ttg agt	1905
Asp Ser Gln Tyr Ser Gly Ile Gly Ser Met Gln Asn Glu Gln Leu Ser	
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Met Met Lys Leu  
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aga cac aaa aat aaa aag cca ggt gaa ggt tcc aag ggc cac aag aag 164  
Arg His Lys Asn Lys Lys Pro Gly Glu Gly Ser Lys Gly His Lys Lys  
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Ile Ser Trp Pro Tyr Pro Gln Pro Ala Lys Gln Asn Gly Lys Lys Ala  
21 26 31 36  
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Thr Ser Lys Val Pro Ser Ala Pro His Phe Val His Pro Asn Asp His  
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Ala Asn Arg Glu Ala Glu Leu Lys Lys Lys Trp Val Glu Glu Met Arg  
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Ile Glu Ser Tyr Cys Gln Asp Val Leu Arg Arg Gln Glu Glu Phe Glu  
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His Lys Glu Glu Val Leu Gln Glu Leu Asn Met Phe Pro Gln Leu Asp  
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Asp Glu Ala Thr Arg Lys Ala Tyr Tyr Lys Glu Phe Arg Lys Val Val  
117 122 127 132  
gaa tac tct gat gtg att ctg gaa gtc ctg gat gcc aga gac cca tta 548  
Glu Tyr Ser Asp Val Ile Leu Glu Val Leu Asp Ala Arg Asp Pro Leu  
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Gly Cys Arg Cys Phe Gln Met Glu Glu Ala Val Leu Arg Ala Gln Gly  
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165 170 175 180

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Glu Val Val Glu Lys Trp Leu Asp Tyr Leu Arg Asn Glu Leu Pro Thr	
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Cys Ser Val Pro Val Asp Gln Ala Ser Glu Ser Leu Leu Lys Ser Lys	
213 218 223 228	
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Ala Cys Phe Gly Ala Glu Asn Leu Met Arg Val Leu Gly Asn Tyr Cys	
229 234 239 244	
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Val Tyr Leu Asp Lys Phe Ile Arg Leu Leu Asp Ala Pro Gly Ile Val	
293 298 303 308	
cca ggg ccc aac tca gag gtg ggc acc atc ctg cgt aac tgc gtc cac	1076
Pro Gly Pro Asn Ser Glu Val Gly Thr Ile Leu Arg Asn Cys Val His	
309 314 319 324	
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Val Gln Lys Leu Ala Asp Pro Val Thr Pro Val Glu Thr Ile Leu Gln	
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Leu Ala Asp Trp Val Ser Gly Lys Ile Ser Phe Tyr Ile Pro Pro Pro	
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Met Thr Glu Val Phe Asp Ile Glu Asp Thr Glu Gln Ala Asn Glu Asp	
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Thr Asp Pro Leu Glu Met Glu Ile Lys Leu Leu His Ser Pro Met Thr	
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Lys Ile Ala Asp Ala Ile Glu Asn Lys Thr Thr Val Tyr Lys Ile Gly	
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Asp Leu Thr Gly Tyr Cys Thr Asn Pro Asn Arg His Gln Met Gly Trp	
485 490 495 500	
gct aaa cgc aat gtg gac cac cgc cct aag agc aac agt atg gtg gat	1652
Ala Lys Arg Asn Val Asp His Arg Pro Lys Ser Asn Ser Met Val Asp	
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Val Cys Ser Val Asp Arg Arg Ser Val Leu Gln Arg Ile Met Glu Thr	
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Asp Pro Leu Gln Gln Gly Gln Ala Leu Ala Ser Ala Leu Lys Asn Lys	
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Lys Lys Met Gln Lys Arg Ala Asp Lys Ile Ala Ser Lys Leu Ser Asp	
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Ser Met Met Ser Ala Leu Asp Leu Ser Gly Asn Ala Asp Asp Gly Val	
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Gly Asp *	
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 cgtgcgcccc ccagctctaa tctgcgcgct gacaggagc atg atc tgt gcc cag 174  
 Met Ile Cys Ala Gln  
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ctc agg ggc ggc ccc cac gat ggc gtc acc att ccc cgc tcc acc agc 366  
 Leu Arg Gly Gly Pro His Asp Gly Val Thr Ile Pro Arg Ser Thr Ser  
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gac act gac ctg gtc acc tcg gac agc cgc tcc acg ctc atg gtc agc 414  
 Asp Thr Asp Leu Val Thr Ser Asp Ser Arg Ser Thr Leu Met Val Ser  
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 Ser Ser Tyr Tyr Ser Ile Gly His Ser Gln Asp Leu Val Ile His Trp  
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 Asp Ile Lys Glu Glu Val Asp Ala Gly Asp Trp Ile Gly Met Tyr Leu  
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Val Asn Gly Ser His Arg Gly Gln Ile Ile Trp Lys Ile Asp Ala Ser	
134 139 144 149	
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Ser Tyr Phe Val Glu Pro Glu Thr Lys Ile Cys Phe Lys Tyr Tyr His	
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Gly Val Ser Gly Ala Leu Arg Ala Thr Thr Pro Ser Val Thr Val Lys	
166 171 176 181	
aac tcg gca gct cct att ttt aaa agc att ggt gct gat gag acc gtc	750
Asn Ser Ala Ala Pro Ile Phe Lys Ser Ile Gly Ala Asp Glu Thr Val	
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caa gga caa gga agt cgg agg ctg atc agc ttc tct ctc tca gat ttc	798
Gln Gly Gln Gly Ser Arg Arg Leu Ile Ser Phe Ser Leu Ser Asp Phe	
198 203 208 213	
caa gcc atg ggg ttg aag aaa ggg atg ttt ttc aac cca gac cct tat	846
Gln Ala Met Gly Leu Lys Lys Gly Met Phe Phe Asn Pro Asp Pro Tyr	
214 219 224 229	
ctg aag att tcc att cag cct ggg aaa cac agc atc ttc ccc gcc ctc	894
Leu Lys Ile Ser Ile Gln Pro Gly Lys His Ser Ile Phe Pro Ala Leu	
230 235 240 245	
cct cac cat gga cag gag agg aga tcc aag atc ata ggc aac acc gtg	942
Pro His His Gly Gln Glu Arg Arg Ser Lys Ile Ile Gly Asn Thr Val	
246 251 256 261	
aac ccc atc tgg cag gcc gag caa ttc agt ttt gtg tcc ttg ccc act	990
Asn Pro Ile Trp Gln Ala Glu Gln Phe Ser Phe Val Ser Leu Pro Thr	
262 267 272 277	
gac gtg ctg gaa att gag gtg aag gac aag ttt gcc aag agc cgc ccc	1038
Asp Val Leu Glu Ile Glu Val Lys Asp Lys Phe Ala Lys Ser Arg Pro	
278 283 288 293	
atc atc aag cgc ttc ttg gga aag ctg tcg atg ccc gtt caa aga ctc	1086
Ile Ile Lys Arg Phe Leu Gly Lys Leu Ser Met Pro Val Gln Arg Leu	
294 299 304 309	
ctg gag aga cac gcc ata ggg gat agg gtg gtc agc tac aca ctt ggc	1134
Leu Glu Arg His Ala Ile Gly Asp Arg Val Val Ser Tyr Thr Leu Gly	
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Arg Arg Leu Pro Thr Asp His Val Ser Gly Gln Leu Gln Phe Arg Phe	
326 331 336 341	
gag atc act tcc tcc atc cac cca gat gat gag gag att tcc ctg agt	1230



Glu Ile Thr Ser Ser Ile His Pro Asp Asp Glu Glu Ile Ser Leu Ser	
342 347 352 357	
acc gag cct gag tca gcc caa att cag gac agc ccc atg aac aac ctg	1278
Thr Glu (Pro Glu Ser Ala Gln Ile Gln Asp Ser Pro Met Asn Asn Leu	
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Met Glu Ser Gly Ser Gly Glu Pro Arg Ser Glu Ala Pro Glu Ser Ser	
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Glu Ser Trp Lys Pro Glu Gln Leu Gly Glu Gly Ser Val Pro Asp Arg	
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Pro Gly Asn Gln Ser Ile Glu Leu Ser Arg Pro Ala Glu Glu Ala Ala	
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Val Ile Thr Glu Ala Gly Asp Gln Gly Met Val Ser Val Gly Pro Glu	
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Ser Ala Leu Leu Leu Glu Asp Gly Glu Ala Pro Ala Ser Thr Lys Glu	
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Gln Gly Glu Gly Arg Leu Gln Leu Arg Ala Ser Val Lys Arg Lys Ser	
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Arg Pro Cys Ser Leu Pro Val Ser Glu Leu Glu Thr Val Ile Ala Ser	
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Ala Cys Gly Asp Pro Glu Thr Pro Arg Thr His Tyr Ile Arg Ile His	
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Thr Leu Leu His Ser Met Pro Ser Ala Gln Gly Gly Ser Ala Ala Glu	

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Glu Glu Asp Gly Ala Glu Glu Glu Ser Thr Leu Lys Asp Ser Ser Glu				
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aag gat ggg ctc agc gag gtg gac acg gtg gcc gct gac ccg tct gcc				1998
Lys Asp Gly Leu Ser Glu Val Asp Thr Val Ala Ala Asp Pro Ser Ala				
598	603	608	613	
ctg gaa gag gac aga gaa gag ccc gag ggg gct act cca ggc acg gcg				2046
Leu Glu Glu Asp Arg Glu Glu Pro Glu Gly Ala Thr Pro Gly Thr Ala				
614	619	624	629	
cac cct ggc cac tcc ggg ggc cac ttc ccc agc ctg gcc aat ggc gcg				2094
His Pro Gly His Ser Gly Gly His Phe Pro Ser Leu Ala Asn Gly Ala				
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gcc cag gat ggc gac acg cac ccc agc acc ggg agc gag agc gac tcc				2142
Ala Gln Asp Gly Asp Thr His Pro Ser Thr Gly Ser Glu Ser Asp Ser				
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agc ccc agg caa ggc ggg gac cac agt tgc gag ggc tgt gac gcg tcc				2190
Ser Pro Arg Gln Gly Gly Asp His Ser Cys Glu Gly Cys Asp Ala Ser				
662	667	672	677	
tgc tgc agc ccc tcg tgc tac agc tcc tcg tgc tac agc acg tcc tgc				2238
Cys Cys Ser Pro Ser Cys Tyr Ser Ser Ser Cys Tyr Ser Thr Ser Cys				
678	683	688	693	
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Tyr Ser Ser Ser Cys Tyr Ser Ala Ser Cys Tyr Ser Pro Ser Cys Tyr				
694	699	704	709	
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Asn Gly Asn Arg Phe Ala Ser His Thr Arg Phe Ser Ser Val Asp Ser				
710	715	720	725	
gcc aag atc tcc gag agc acg gtc ttc tcc tcg caa gac gac gag gag				2382
Ala Lys Ile Ser Glu Ser Thr Val Phe Ser Ser Gln Asp Asp Glu Glu				
726	731	736	741	
gag gag aac agc gcg ttc gag tcg gta ccc gac tcc atg cag agc cct				2430
Glu Glu Asn Ser Ala Phe Glu Ser Val Pro Asp Ser Met Gln Ser Pro				
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gag ctg gac ccg gag tcc acg aac ggc gct ggg ccg tgg caa gac gag				2478
Glu Leu Asp Pro Glu Ser Thr Asn Gly Ala Gly Pro Trp Gln Asp Glu				
758	763	768	773	
ctg gcc gcc cct agc ggg cac gtg gaa aga agc ccg gaa ggt ctg gaa				2526
Leu Ala Ala Pro Ser Gly His Val Glu Arg Ser Pro Glu Gly Leu Glu				
774	779	784	789	
tcc ccc gtg gca ggt cca agc aat cgg aga gaa ggt gaa tgt cct ata				2574
Ser Pro Val Ala Gly Pro Ser Asn Arg Arg Glu Gly Glu Cys Pro Ile				
790	795	800	805	

ctc cat aat tcc cag cca gta agc cag ctt cct tcc ctg agg cct gaa	2622
Leu His Asn Ser Gln Pro Val Ser Gln Leu Pro Ser Leu Arg Pro Glu	
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cat cat cac tac cca aca atc gat gag cct ctt cca cca aac tgg gaa	2670
His His His Tyr Pro Thr Ile Asp Glu Pro Leu Pro Pro Asn Trp Glu	
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gct cga att gac agc cac ggg cgg gtc ttt tat gtg gac cac gtg aac	2718
Ala Arg Ile Asp Ser His Gly Arg Val Phe Tyr Val Asp His Val Asn	
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Arg Thr Thr Thr Trp Gln Arg Pro Thr Ala Ala Ala Thr Pro Asp Gly	
854 859 864 869	
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Met Arg Arg Ser Gly Ser Ile Gln Gln Met Glu Gln Leu Asn Arg Arg	
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Tyr Gln Asn Ile Gln Arg Thr Ile Ala Thr Glu Arg Ser Glu Glu Asp	
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Ser Gly Ser Gln Ser Cys Glu Gln Ala Pro Ala Gly Gly Gly Gly Gly	
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Gly Gly Ser Asp Ser Glu Ala Glu Ser Ser Gln Ser Ser Leu Asp Leu	
918 923 928 933	
agg aga gag ggg tca ctt tct cca gtg aac tca caa aaa atc acc ttg	3006
Arg Arg Glu Gly Ser Leu Ser Pro Val Asn Ser Gln Lys Ile Thr Leu	
934 939 944 949	
ctg ctg cag tcc cca gcg gtc aag ttc atc acc aac ccc gag ttc ttc	3054
Leu Leu Gln Ser Pro Ala Val Lys Phe Ile Thr Asn Pro Glu Phe Phe	
950 955 960 965	
act gtg cta cat gcc aat tat agt gcc tac cga gtc ttc acc agt agc	3102
Thr Val Leu His Ala Asn Tyr Ser Ala Tyr Arg Val Phe Thr Ser Ser	
966 971 976 981	
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Thr Cys Leu Lys His Met Ile Leu Lys Val Arg Arg Asp Ala Arg Asn	
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Phe Glu Arg Tyr Gln His Asn Arg Asp Leu Val Asn Phe Ile Asn Met	
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ttc gca gac act cgg ctg gaa ctg ccc cgg ggc tgg gag atc aaa acg	3246
Phe Ala Asp Thr Arg Leu Glu Leu Pro Arg Gly Trp Glu Ile Lys Thr	
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Asp Gln Gln Gly Lys Ser Phe Phe Val Asp His Asn Ser Arg Ala Thr	
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Thr Phe Ile Asp Pro Arg Ile Pro Leu Gln Asn Gly Arg Leu Pro Asn	
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His Leu Thr His Arg Gln His Leu Gln Arg Leu Arg Ser Tyr Ser Ala	
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Gly Glu Ala Ser Glu Val Ser Arg Asn Arg Gly Ala Ser Leu Leu Ala	
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Arg Pro Gly His Ser Leu Val Ala Ala Ile Arg Ser Gln His Gln His	
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Glu Ser Leu Pro Leu Ala Tyr Asn Asp Lys Ile Val Ala Phe Leu Arg	
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Gln Pro Asn Ile Phe Glu Met Leu Gln Glu Arg Gln Pro Ser Leu Ala	
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Arg Asn His Thr Leu Arg Glu Lys Ile His Tyr Ile Arg Thr Glu Gly	
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Asn His Gly Leu Glu Lys Leu Ser Cys Asp Ala Asp Leu Val Ile Leu	
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Ala Phe His Pro Gly Tyr Ser Phe Ser Pro Arg Cys Ser Pro Cys Ser	
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Ser Pro Gln Asn Ser Pro Gly Leu Gln Arg Ala Ser Ala Arg Ala Pro	
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Ser Pro Tyr Arg Arg Asp Phe Glu Ala Lys Leu Arg Asn Phe Tyr Arg	
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Lys Leu Glu Ala Lys Gly Phe Gly Gln Gly Pro Gly Lys Ile Lys Leu	
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Ile Ile Arg Arg Asp His Leu Leu Glu Gly Thr Phe Asn Gln Val Met	
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Ala Tyr Ser Arg Lys Glu Leu Gln Arg Asn Lys Leu Tyr Val Thr Phe	
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Val Gly Glu Glu Gly Leu Asp Tyr Ser Gly Pro Ser Arg Glu Phe Phe	
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Phe Leu Leu Ser Gln Glu Leu Phe Asn Pro Tyr Tyr Gly Leu Phe Glu	
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Pro Phe Tyr Lys Ala Leu Leu Arg Leu Pro Cys Asp Leu Ser Asp Leu	
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Glu Tyr Leu Asp Glu Glu Phe His Gln Ser Leu Gln Trp Met Lys Asp	
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Val Phe Gly Gln Val Thr Glu Arg Glu Leu Lys Ser Gly Gly Ala Asn	
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Thr Gln Val Thr Glu Lys Asn Lys Lys Glu Tyr Ile Glu Arg Met Val	
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Arg Gly Phe Tyr Glu Val Val Asp Ser Arg Leu Val Ser Val Phe Asp	
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Ala Arg Glu Leu Glu Leu Val Ile Ala Gly Thr Ala Glu Ile Asp Leu	

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 Cys Phe Tyr Leu Leu Met Leu Val Met Val Glu Gly Phe Gly Gly Lys  
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Gly	Pro	Cys	Cys	Cys	Cys	Cys	Pro	Cys	Pro	Arg	Leu	Leu	Leu	Thr			
42					47				52					57			
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Arg	Lys	Lys	Leu	Gln	Leu	Leu	Met	Leu	Gly	Pro	Phe	Gln	Tyr	Ala	Phe		
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Ile	Tyr	Asp	Pro	Ala	Asp	Ile	Ser	Glu	Gly	Ser	Thr	Ala	Leu	Trp	Ile		
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Asn	Thr	Phe	Leu	Gly	Val	Ser	Thr	Leu	Leu	Ala	Leu	Trp	Thr	Leu	Gly		
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Ile	Ile	Ser	Arg	Gln	Ala	Arg	Leu	His	Leu	Gly	Glu	Gln	Asn	Met	Gly		
122					127				132					137			
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Ala	Lys	Phe	Ala	Leu	Phe	Gln	Val	Leu	Leu	Ile	Leu	Thr	Ala	Leu	Gln		
138					143				148					153			
ccc	tcc	atc	ttc	tca	gtc	ttg	gcc	aac	ggt	ggg	cag	att	gct	tgt	tcg	891	
Pro	Ser	Ile	Phe	Ser	Val	Leu	Ala	Asn	Gly	Gly	Gln	Ile	Ala	Cys	Ser		
154					159				164					169			
cct	ccc	tat	tcc	tct	aaa	acc	agg	tct	caa	gtg	atg	aat	tgc	cac	ctc	939	
Pro	Pro	Tyr	Ser	Ser	Lys	Thr	Arg	Ser	Gln	Val	Met	Asn	Cys	His	Leu		
170					175				180					185			
ctc	ata	ctg	gag	act	ttt	cta	atg	act	gtg	ctg	aca	cga	atg	tac	tac	987	
Leu	Ile	Leu	Glu	Thr	Phe	Leu	Met	Thr	Val	Leu	Thr	Arg	Met	Tyr	Tyr		
186					191				196					201			
cga	agg	aaa	gac	cac	aag	gtt	ggg	tat	gaa	act	ttc	tct	tct	cca	gac	1035	
Arg	Arg	Lys	Asp	His	Lys	Val	Gly	Tyr	Glu	Thr	Phe	Ser	Ser	Pro	Asp		
202					207				212					217			
ctg	gac	ttg	aac	ctc	aaa	gcc	taa	ggtggatggc	ttggacaatg	aaaggatgct						1089	
Leu	Asp	Leu	Asn	Leu	Lys	Ala	*										
218					223												
gtactcatta	gaatacaaga	ttcctttact	gtccctcaac	cttgacaaaa	tggaagcat											1149	
tcccccttgt	caacacaagc	tggcagatac	atttgactct	acagatgaag	gtgaacaatg											1209	
ttaggataaa	attgcttttg	atcttgccctg	gaagggtgttt	taagttttgt	aataaacaag											1269	



atgatgtctg aaaatgtgta actgggcacc ttgcctctgt ccatgtcact attaaccctt 1329  
 caaggttgta tattgctggc taggtgcgac agctcatgcc tgctatccca gcactttggg 1389  
 agcctgagggc gggaggatca cttgagccca ggaggttgag gccgcagtga gdaatggttg 1449  
 tgccatacac tccagcctgg gtgatacagc cagaccctgc ctctggaaaa aaaagaaagc 1509  
 ttactgagct ttccctaaagc agatgaaaag aagagtatat agtatt 1555

<210> 228  
 <211> 955  
 <212> DNA  
 <213> Homo sapiens

<220>  
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 <222> (80) .. (583)

<400> 228

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 agaagagcta tgacgtcgc atg cac gcg tac gta agc ttg gat cct cta gag 112  
 Met His Ala Tyr Val Ser Leu Asp Pro Leu Glu  
 1 5  
 cgg ccg cct act act act ata cgg ctg cga gaa gac gac aga agg gcg 160  
 Arg Pro Pro Thr Thr Thr Ile Arg Leu Arg Glu Asp Asp Arg Arg Ala  
 12 17 22 27  
 act ctc acc tct cat gtg ctt ctg gcc agt agg tct ttg ttc tgg tcc 208  
 Thr Leu Thr Ser His Val Leu Leu Ala Ser Arg Ser Leu Phe Trp Ser  
 28 33 38 43  
 aac gac agg agt agg ctt gta ttt aaa agc ggc ccc tcc tct cct gtg 256  
 Asn Asp Arg Ser Arg Leu Val Phe Lys Ser Gly Pro Ser Ser Pro Val  
 44 49 54 59  
 gcc aca gaa cac agg cgt gct tgg att ctt gac aag cag ccc tgc tcc 304  
 Ala Thr Glu His Arg Arg Ala Trp Ile Leu Asp Lys Gln Pro Cys Ser  
 60 65 70 75  
 tgc aga gga gac agc cac att tgg aat tgg gca ccg aga aga cct gag 352  
 Cys Arg Gly Asp Ser His Ile Trp Asn Trp Ala Pro Arg Arg Pro Glu  
 76 81 86 91  
 aaa aac cca ctc tct ctt ttt ttt ttt gag acg gag tct tgc tct gtc 400  
 Lys Asn Pro Leu Ser Leu Phe Phe Phe Glu Thr Glu Ser Cys Ser Val  
 92 97 102 107  
 acc cag gct gga gtg cag tgg cac gat ctc ggc tca ctg caa cct ccg 448  
 Thr Gln Ala Gly Val Gln Trp His Asp Leu Gly Ser Leu Gln Pro Pro  
 108 113 118 123

cct ccc aag ttc aag caa ttc tcc tgc ccc agc ctc ctg att agc tgg	496
Pro Pro Lys Phe Lys Gln Phe Ser Cys Pro Ser Leu Leu Ile Ser Trp	
124 129 134 139	
gat tac agg cgt gtg cca cca tgc cca gct aat ttt tgt gtt ttt agt	544
Asp Tyr Arg Arg Val Pro Pro Cys Pro Ala Asn Phe Cys Val Phe Ser	
140 145 150 155	
aga gac ggg gtt tca cca tgt tgg tca ggc tgg tct tga actcctgacg	593
Arg Asp Gly Val Ser Pro Cys Trp Ser Gly Trp Ser *	
156 161 166	
tggtgatcca cctgcctcgg cctcccaaag tgctgggatt acaggcgtga gccaccacgc	653
ctggccgaaa aaccactct cataacagaa gtgcagactc attgctagat tcagtgcctt	713
tgagtgtgcc agaggtcctc tgtgtttgag acaatcctgt gtgtgccagg aggctccgtg	773
tgcaccaggg gctctcagaa tcccgcttac ccagctggag accatgcctc tggcagcccc	833
atctcagcca gccctgctct ctccctcttc cctccaggtg aggcaaactt cataggaatc	893
tgtacctgaa tgtgagctcc tgataataaa actctgaggc tttggtgagc gcaaaaaaaaa	953
aa	955

<210> 229  
 <211> 956  
 <212> DNA  
 <213> Homo sapiens

<220>  
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 <222> (56) .. (823)

<400> 229	
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Met	
1	
atc cta aac aaa gct ctg atg ctg ggg gcc ctc gcc ctg acc acc gtg	106
Ile Leu Asn Lys Ala Leu Met Leu Gly Ala Leu Ala Leu Thr Thr Val	
2 7 12 17	
atg agc cct tgt gga ggt gaa gac att gtg gct gac cat gtt gcc tct	154
Met Ser Pro Cys Gly Gly Glu Asp Ile Val Ala Asp His Val Ala Ser	
18 23 28 33	
tac ggt gta aac ttg tac cag tct tat ggt ccc tct ggg cag tac agc	202
Tyr Gly Val Asn Leu Tyr Gln Ser Tyr Gly Pro Ser Gly Gln Tyr Ser	
34 39 44 49	
cat gaa ttt gat gga gac gag gag ttc tat gtg gac ctg gag agg aag	250
His Glu Phe Asp Gly Asp Glu Glu Phe Tyr Val Asp Leu Glu Arg Lys	

50	55	60	65	
gag act gtc tgg cag ttg cct ctg ttc cgc aga ttt aga aga ttt gac				298
Glu Thr Val Trp Gln Leu Pro Leu Phe Arg Arg Phe Arg Arg Phe Asp				
66	71	76	81	
ccg caa ttt gca ctg aca aac atc gct gtg cta aaa cat aac ttg aac				346
Pro Gln Phe Ala Leu Thr Asn Ile Ala Val Leu Lys His Asn Leu Asn				
82	87	92	97	
atc gtg att aaa cgc tcc aac tct acc gct gct acc aat gag gtt cct				394
Ile Val Ile Lys Arg Ser Asn Ser Thr Ala Ala Thr Asn Glu Val Pro				
98	103	108	113	
gag gtc aca gtg ttt tcc aag tct ccc gtg aca ctg ggt cag ccc aac				442
Glu Val Thr Val Phe Ser Lys Ser Pro Val Thr Leu Gly Gln Pro Asn				
114	119	124	129	
acc ctc atc tgt ctt gtg gac aac atc ttt cct cct gtg gtc aac atc				490
Thr Leu Ile Cys Leu Val Asp Asn Ile Phe Pro Pro Val Val Asn Ile				
130	135	140	145	
acc tgg ctg agc aat ggg cac tca gtc aca gaa ggt gtt tct gag acc				538
Thr Trp Leu Ser Asn Gly His Ser Val Thr Glu Gly Val Ser Glu Thr				
146	151	156	161	
agc ttc ctc tcc aag agt gat cat tcc ttc ttc aag atc agt tac ctc				586
Ser Phe Leu Ser Lys Ser Asp His Ser Phe Phe Lys Ile Ser Tyr Leu				
162	167	172	177	
acc ttc ctc cct tct gct gat gag att tat gac tgc aag gtg gag cac				634
Thr Phe Leu Pro Ser Ala Asp Glu Ile Tyr Asp Cys Lys Val Glu His				
178	183	188	193	
tgg ggc ctg gat gag cct ctt ctg aaa cac tgg gag cct gag att cca				682
Trp Gly Leu Asp Glu Pro Leu Leu Lys His Trp Glu Pro Glu Ile Pro				
194	199	204	209	
aca cct atg tca gag ctc aca gag act gtg gtc tgc gcc ctg ggg ttg				730
Thr Pro Met Ser Glu Leu Thr Glu Thr Val Val Cys Ala Leu Gly Leu				
210	215	220	225	
tct gtg ggc ctc gtg ggc att gtg gtg ggg acc gtc ttg atc atc cga				778
Ser Val Gly Leu Val Gly Ile Val Val Gly Thr Val Leu Ile Ile cga				
226	231	236	241	
ggc ctg cgt tca gtt ggt gct tcc aga cac caa ggg ccc ttg tga atc				826
Gly Leu Arg Ser Val Gly Ala Ser Arg His Gln Gly Pro Leu *				
242	247	252		
ccatcctgaa aaggaagggtg ttacctacta agagatgcct ggggtaagcc gccagctac				886
ctaattcctc agtaacatcg atctaaaatc tccatggaag caataaatc cctttaagag				946
aaaaaaaaa				956

<210> 230  
 <211> 1685  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> CDS  
 <222> (61)..(1338)

<400> 230  
 aatgataccc gtgcggcacc ggcccggaat tcccgggtcg acccacgcgt ccggttgagg 60

atg gcc gga gcc gag ggc gcc gct ggg cgg cag tgc gag ctg gag ccc 108  
 Met Ala Gly Ala Glu Gly Ala Ala Gly Arg Gln Ser Glu Leu Glu Pro  
 1 5 10 15

gtg gta tgc ttg gtc gac gtc ctt gag gag gac gag gag ctg gag aat 156  
 Val Val Ser Leu Val Asp Val Leu Glu Glu Asp Glu Glu Leu Glu Asn  
 17 22 27 32

gag gcg tgc gct gtc ctg ggc ggc agc gac tcc gag aag tgc tcc tac 204  
 Glu Ala Cys Ala Val Leu Gly Gly Ser Asp Ser Glu Lys Cys Ser Tyr  
 33 38 43 48

tct cag ggc tca gta aag aga caa gca cta tat gcc tgt agt acc tgc 252  
 Ser Gln Gly Ser Val Lys Arg Gln Ala Leu Tyr Ala Cys Ser Thr Cys  
 49 54 59 64

acc cca gag gga gaa gaa cca gca gga att tgt tta gct tgc agt tat 300  
 Thr Pro Glu Gly Glu Glu Pro Ala Gly Ile Cys Leu Ala Cys Ser Tyr  
 65 70 75 80

gaa tgt cat gga agt cac aaa cta ttt gag cta tac aca aaa aga aat 348  
 Glu Cys His Gly Ser His Lys Leu Phe Glu Leu Tyr Thr Lys Arg Asn  
 81 86 91 96

ttt cgt tgt gat tgt gga aac agc aag ttt aaa aat ttg gaa tgc aaa 396  
 Phe Arg Cys Asp Cys Gly Asn Ser Lys Phe Lys Asn Leu Glu Cys Lys  
 97 102 107 112

tta ctt cct gac aaa gca aag gta aat tct ggc aat aag tac aat gac 444  
 Leu Leu Pro Asp Lys Ala Lys Val Asn Ser Gly Asn Lys Tyr Asn Asp  
 113 118 123 128

aac ttt ttt gga ttg tac tgc att tgc aag aga cct tat cct gat cct 492  
 Asn Phe Phe Gly Leu Tyr Cys Ile Cys Lys Arg Pro Tyr Pro Asp Pro  
 129 134 139 144

gaa gac gag att cca gat gag atg atc cag tgc gta gtc tgt gaa gac 540  
 Glu Asp Glu Ile Pro Asp Glu Met Ile Gln Cys Val Val Cys Glu Asp  
 145 150 155 160

tgg ttc cat gga agg cat ctt ggt gcc att ccc cct gag agt ggg gat 588  
 Trp Phe His Gly Arg His Leu Gly Ala Ile Pro Pro Glu Ser Gly Asp  
 161 166 171 176

ttt cag gag atg gta tgc cag gcc tgc atg aaa cgt tgt tct ttt ttg	636
Phe Gln Glu Met Val Cys Gln Ala Cys Met Lys Arg Cys Ser Phe Leu	
177 182 187 192	
tggt gct tat gct gca caa ttg gca gta acc aaa ata tcc act gag gat	684
Trp Ala Tyr Ala Ala Gln Leu Ala Val Thr Lys Ile Ser Thr Glu Asp	
193 198 203 208	
gat gga ttg gtg cgg aac att gat gga ata ggt gat cag gaa gtt atc	732
Asp Gly Leu Val Arg Asn Ile Asp Gly Ile Gly Asp Gln Glu Val Ile	
209 214 219 224	
aaa cct gaa aat gga gag cat caa gat agt acc ctg aaa gag gat gtt	780
Lys Pro Glu Asn Gly Glu His Gln Asp Ser Thr Leu Lys Glu Asp Val	
225 230 235 240	
cca gaa cag gga aag gat gat gtc cgg gag gtt aaa gta gag cag aac	828
Pro Glu Gln Gly Lys Asp Asp Val Arg Glu Val Lys Val Glu Gln Asn	
241 246 251 256	
agt gaa cca tgt gcc ggc tct agt tct gaa tct gat ctg cag aca gtg	876
Ser Glu Pro Cys Ala Gly Ser Ser Ser Glu Ser Asp Leu Gln Thr Val	
257 262 267 272	
ttt aag aat gaa agc ctg aac gca gaa tca aaa tct ggc tgc aaa ctt	924
Phe Lys Asn Glu Ser Leu Asn Ala Glu Ser Lys Ser Gly Cys Lys Leu	
273 278 283 288	
cag gag ctt aaa gct aag cag ctt ata aag aaa gac act gcc acc tat	972
Gln Glu Leu Lys Ala Lys Gln Leu Ile Lys Lys Asp Thr Ala Thr Tyr	
289 294 299 304	
tggt ccc ctg aac ttg cgt agc aag ttg tgt acc tgc caa gac tgt atg	1020
Trp Pro Leu Asn Trp Arg Ser Lys Leu Cys Thr Cys Gln Asp Cys Met	
305 310 315 320	
aaa atg tat gga gat cta gat gtc tta ttc ctg aca gat gaa tac gac	1068
Lys Met Tyr Gly Asp Leu Asp Val Leu Phe Leu Thr Asp Glu Tyr Asp	
321 326 331 336	
aca gtt ctg gct tat gaa aac aaa ggg aag att gcc cag gcc act gac	1116
Thr Val Leu Ala Tyr Glu Asn Lys Gly Lys Ile Ala Gln Ala Thr Asp	
337 342 347 352	
agg agc gat ccc cta atg gat acc ctt agc agc atg aat aga gtc cag	1164
Arg Ser Asp Pro Leu Met Asp Thr Leu Ser Ser Met Asn Arg Val Gln	
353 358 363 368	
caa gtg gaa ctg att tgt gaa tac aat gat ttg aag act gaa ctt aaa	1212
Gln Val Glu Leu Ile Cys Glu Tyr Asn Asp Leu Lys Thr Glu Leu Lys	
369 374 379 384	
gac tat ctg aag aga ttt gct gat gaa ggc acg gtt gtt aag aga gag	1260
Asp Tyr Leu Lys Arg Phe Ala Asp Glu Gly Thr Val Val Lys Arg Glu	
385 390 395 400	

gac att cag cag ttc ttt gaa gag ttt cag tca aaa aag aga aga aga 1308  
 Asp Ile Gln Gln Phe Phe Glu Glu Phe Gln Ser Lys Lys Arg Arg Arg  
 401 406 411 416

gtg gat ggg atg cag tat tac tgc agc tag a gtggagtatg aagctttctc 1359  
 Val Asp Gly Met Gln Tyr Tyr Cys Ser \*  
 417 422

attcaagcca atgaaaatgc gcttcccatt cttggaataa aagaggtgtg gttcacattt 1419

ggcccccttt ccgtctctct ctgtttggag aggcctcgcg ctcccttcat tctcttttagc 1479

tgcagtagcc accgtgtgga tgctgacttc acagccagcg tcctctgtga ctcagctgat 1539

gcagctcatt ccacagactt cgccagtgtg ctctactcc agtgcaccca gggttatttg 1599

catagttttt aagtttgatt ttgttttgag aaagcaaatt tgggtgtcttt gtttaatgat 1659

ctgttatttc actcccagat gtgtgt 1685

<210> 231  
 <211> 1593  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> CDS  
 <222> (151) .. (1437)

<400> 231  
 gcacaggact ttgcctcggg ccagctatgt gttcagcccg gaatctgaag tgtcagccca 60

ggcgtctctg aagaccgact aaagccccag gaaggggaagg gaagtgtgct aaggcgggat 120

gtgtcagtca aagcagcctc tgaacttctc atg aaa ctc tca gcg gaa agc 171  
 Met Lys Leu Ser Ala Glu Ser  
 1 5

tac aag gaa aca cag atg gtg aag att aaa gag gaa ccc atg gag gtt 219  
 Tyr Lys Glu Thr Gln Met Val Lys Ile Lys Glu Glu Pro Met Glu Val  
 8 13 18 23

gac atc cag gac tcc cat gtc tcg ata tca ccc agc cgg aat gtt ggc 267  
 Asp Ile Gln Asp Ser His Val Ser Ile Ser Pro Ser Arg Asn Val Gly  
 24 29 34 39

tac agc act tta atc ggg cga gag aaa acc gaa ccc tta cag aag atg 315  
 Tyr Ser Thr Leu Ile Gly Arg Glu Lys Thr Glu Pro Leu Gln Lys Met  
 40 45 50 55

cca gag ggc aga gta ccc cca gag aga aac ctc ttc agt cag gat atc 363  
 Pro Glu Gly Arg Val Pro Pro Glu Arg Asn Leu Phe Ser Gln Asp Ile  
 56 61 66 71

tct gtg aaa atg gct tcc gag ctc ctc ttt caa ctg tca gaa aaa gtg	411
Ser Val Lys Met Ala Ser Glu Leu Leu Phe Gln Leu Ser Glu Lys Val	
72 77 82 87	
agc aaa gag cac aat cat aca aaa gaa aac acc atc cgg acc acg acc	459
Ser Lys Glu His Asn His Thr Lys Glu Asn Thr Ile Arg Thr Thr Thr	
88 93 98 103	
agc cct ttc ttt tca gaa gac aca ttt aga caa tca cca ttc acc tcc	507
Ser Pro Phe Phe Ser Glu Asp Thr Phe Arg Gln Ser Pro Phe Thr Ser	
104 109 114 119	
aat tca aaa gaa ctg ctg ccc agt gac tcc gtg ctg cac gga aga ata	555
Asn Ser Lys Glu Leu Leu Pro Ser Asp Ser Val Leu His Gly Arg Ile	
120 125 130 135	
tca gct cca gaa aca gaa aag ata gtc cta gag gca gga aat gga tta	603
Ser Ala Pro Glu Thr Glu Lys Ile Val Leu Glu Ala Gly Asn Gly Leu	
136 141 146 151	
cca tcc tgg aaa ttc aat gac cag ctt ttt ccc tgt gac gtg tgt ggg	651
Pro Ser Trp Lys Phe Asn Asp Gln Leu Phe Pro Cys Asp Val Cys Gly	
152 157 162 167	
aaa gtg ttt ggc cga cag cag aca ttg tcc cga cac ctc tcg ctg cac	699
Lys Val Phe Gly Arg Gln Gln Thr Leu Ser Arg His Leu Ser Leu His	
168 173 178 183	
aca gag gaa aga aaa tac aaa tgc cac ttg tgc ccc tat gct gct aag	747
Thr Glu Glu Arg Lys Tyr Lys Cys His Leu Cys Pro Tyr Ala Ala Lys	
184 189 194 199	
tgc cgt gca aat ctg aac cag cac ttg acc gtc cat tcc gtg aag ctg	795
Cys Arg Ala Asn Leu Asn Gln His Leu Thr Val His Ser Val Lys Leu	
200 205 210 215	
gtg agt aca gac acc gag gac att gtc agc gcc gtc acc tct gaa ggc	843
Val Ser Thr Asp Thr Glu Asp Ile Val Ser Ala Val Thr Ser Glu Gly	
216 221 226 231	
agt gat ggg aag aaa cat cct tat tat tac agt tgt cac gtg tgt gga	891
Ser Asp Gly Lys Lys His Pro Tyr Tyr Tyr Ser Cys His Val Cys Gly	
232 237 242 247	
ttt gag acc gag ctc aat gtc cag ttt gtc agc cac atg tca ctc cac	939
Phe Glu Thr Glu Leu Asn Val Gln Phe Val Ser His Met Ser Leu His	
248 253 258 263	
gtg gac aag gag cag tgg atg ttt tcg atc tgc tgc act gcc tgc gac	987
Val Asp Lys Glu Gln Trp Met Phe Ser Ile Cys Cys Thr Ala Cys Asp	
264 269 274 279	
ttc gtc acc atg gag gaa gca gag ata aag act cac att ggc acc aag	1035
Phe Val Thr Met Glu Glu Ala Glu Ile Lys Thr His Ile Gly Thr Lys	
280 285 290 295	
cac aca ggg gaa gac agg aag acc ccc agc gaa tca aat agc ccc tct	1083

His Thr Gly Glu Asp Arg Lys Thr Pro Ser Glu Ser Asn Ser Pro Ser	
296 301 306 311	
tca tcc tcc ctc tca gct ctg agt gat tca gcc aac agc aaa gat gat	1131
Ser Ser Ser Leu Ser Ala Leu Ser Asp Ser Ala Asn Ser Lys Asp Asp	
312 317 322 327	
tca gat ggc tcc cag aaa aac aag ggc ggg aac aat ctg ctg gtc atc	1179
Ser Asp Gly Ser Gln Lys Asn Lys Gly Gly Asn Asn Leu Leu Val Ile	
328 333 338 343	
tct gtc atg cct ggg agc cag ccc tca ctg aac agt gag gaa aag cca	1227
Ser Val Met Pro Gly Ser Gln Pro Ser Leu Asn Ser Glu Glu Lys Pro	
344 349 354 359	
gag aaa ggg ttc gaa tgt gtt ttt tgc aac ttt gtc tgc aag acg aag	1275
Glu Lys Gly Phe Glu Cys Val Phe Cys Asn Phe Val Cys Lys Thr Lys	
360 365 370 375	
aac atg ttt gag cgt cat ctg cag ata cac ctc atc acc cgg atg ttt	1323
Asn Met Phe Glu Arg His Leu Gln Ile His Leu Ile Thr Arg Met Phe	
376 381 386 391	
gag tgt gat gtg tgc cac aag ttc atg aag acc ccc gaa cag ctg ctg	1371
Glu Cys Asp Val Cys His Lys Phe Met Lys Thr Pro Glu Gln Leu Leu	
392 397 402 407	
gag cat aag aaa tgc cac act gtc ccc acc ggt ggg ctc aat tta tgt	1419
Glu His Lys Lys Cys His Thr Val Pro Thr Gly Gly Leu Asn Leu Cys	
408 413 418 423	
tct agg atg acc aag tag aagaat actttgaaaa aattgataat gccttctggc	1473
Ser Arg Met Thr Lys *	
424 429	
tatacagtgc ccattctgca ttattccac caaccgcccc gctgccatgg agtgccacct	1533
caagaccac tacaagatgg agtacaagtg ccggatctgc cagacggtga aggccaaccc	1593

<210> 232  
 <211> 1234  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> CDS  
 <222> (342) .. (1046)

<400> 232	
tcttgggttg acccacgcgt cccatgccac gtctgtctct gttgaacacg gatgtgtgca	60
gagcattctc tttctttaca aatctgatgt ggggagagga aagatgaatt tttatttcat	120
aaagccacta gatcagcaat tctgaccct gtgaccacag agttcccatc cacgcggctg	180





gtc gac ctg ccc aag gcc atc gct ggc ggg tcc gcc tgt gtc tgc gcc 977  
Val Asp Leu Pro Lys Ala Ile Ala Gly Gly Ser Ala Cys Val Cys Ala  
197 202 207 212

ctg gag cca cgg cca gag gac aag aag aag aaa ggc aaa ggc aag agg 1025  
Leu Glu Pro Arg Pro Glu Asp Lys Lys Lys Lys Gly Lys Gly Lys Arg  
213 218 223 228

cac cag gac cgg ggc cag tga cc ctagctgcgc ctcttgggac catcctcacc 1078  
His Gln Asp Arg Gly Gln \*  
229 234

gtcacctccc agggctctgt agaccagcag caacttctta gtattccgga aacattatgt 1138

acaacttagc agcttttttt acttttatga ttattgggat ttctatgata tcacagtaac 1198

caattaaata ctatctgtaa ctttaaaaaa aaaaaa 1234

<210> 233  
<211> 3542  
<212> DNA  
<213> Homo sapiens

<220>  
<221> CDS  
<222> (1) .. (3168)

<400> 233

atg gag gcg gag gcg gcg gca gct cct gag cgg gaa ggc ggg agc tgc 48  
Met Glu Ala Glu Ala Ala Ala Ala Pro Glu Arg Glu Gly Gly Ser Cys  
1 5 10

gtg ctg tgc tgc gga gac ctg gag gcc acg gcg ctg ggg ccg ctg cga 96  
Val Leu Cys Cys Gly Asp Leu Glu Ala Thr Ala Leu Gly Pro Leu Arg  
17 22 27 32

cca ccc ggt gtg cta ccg ctg ctc tac caa gat gcg ggt gct ctg cga 144  
Pro Pro Gly Val Leu Pro Leu Leu Tyr Gln Asp Ala Gly Ala Leu Arg  
33 38 43 48

gca gcg cta ctg cgc cgt gtg ccg cga gga gct gcg cca gct gct ggc 192  
Ala Ala Leu Leu Arg Arg Val Pro Arg Gly Ala Ala Pro Ala Ala Gly  
49 54 59 64

tgt ggg cac ctg gct gga gcc cgt tgg ttt gct gag ctt aga gat ttg 240  
Cys Gly His Leu Ala Gly Ala Arg Trp Phe Ala Glu Leu Arg Asp Leu  
65 70 75 80

ttt gct tcc agc att gtg aaa ttc ccc cgg ttt gtt cat aga agg ctt 288  
Phe Ala Ser Ser Ile Val Lys Phe Pro Arg Phe Val His Arg Arg Leu  
81 86 91 96

cgg ctg gtg aca tct gcc agg aat cta act ttc ttc tcc cca gaa gtg 336  
Arg Leu Val Thr Ser Ala Arg Asn Leu Thr Phe Phe Ser Pro Glu Val

97	102	107	112	
atg cag agc agt att gag gca gac act ggc ttc ctc gcc cgc ctg cct				384
Met Gln Ser Ser Ile Glu Ala Asp Thr Gly Phe Leu Ala Arg Leu Pro				
113	118	123	128	
gct gct tcg gga gct gtg gtg ggg aag tgg ccc tgt ctg gtt ccc ggg				432
Ala Ala Ser Gly Ala Val Val Gly Lys Trp Pro Cys Leu Val Pro Gly				
129	134	139	144	
agt cca ggt act cag ctc ccc gag gag gct cgc gct ctg cgt ccc agc				480
Ser Pro Gly Thr Gln Leu Pro Glu Glu Ala Arg Ala Leu Arg Pro Ser				
145	150	155	160	
agc acc ctg agt ggc tcc gct cag ctc ccc gag gag gct cgt gct ctg				528
Ser Thr Leu Ser Gly Ser Ala Gln Leu Pro Glu Glu Ala Arg Ala Leu				
161	166	171	176	
ggc ccc agc agc acc ctg agt ggc tgc aca gat tgc gcc tgt gag ggt				576
Gly Pro Ser Ser Thr Leu Ser Gly Cys Thr Asp Cys Ala Cys Glu Gly				
177	182	187	192	
cgg gct gga gag gcg ccc ttg gga gtg gtc ttt ggg aag aag ctt cct				624
Arg Ala Gly Glu Ala Pro Leu Gly Val Val Phe Gly Lys Lys Leu Pro				
193	198	203	208	
gcc ttt gcc acc atc ccc atc cac cag ctg cag cat gag aag aaa tat				672
Ala Phe Ala Thr Ile Pro Ile His Gln Leu Gln His Glu Lys Lys Tyr				
209	214	219	224	
gat atc tac ttt gca gat gga aag gtg tac gca ttg tac agg cag ctg				720
Asp Ile Tyr Phe Ala Asp Gly Lys Val Tyr Ala Leu Tyr Arg Gln Leu				
225	230	235	240	
ctg cag cac gag tgc ccg cgg tgc ccc gag ctg cca cct ttc agc ctc				768
Leu Gln His Glu Cys Pro Arg Cys Pro Glu Leu Pro Pro Phe Ser Leu				
241	246	251	256	
ttc ggg gac ctg gag cag cac atg cgg agg cag cat gag ctc ttc tgc				816
Phe Gly Asp Leu Glu Gln His Met Arg Arg Gln His Glu Leu Phe Cys				
257	262	267	272	
tgc cgt ctg tgc ctc cag cac ctc cag atc ttc aca tat gag cgc aag				864
Cys Arg Leu Cys Leu Gln His Leu Gln Ile Phe Thr Tyr Glu Arg Lys				
273	278	283	288	
tgg tac tcg cgc aag gac ctg gcc cgg cat cgc atg cag ggt gac ccc				912
Trp Tyr Ser Arg Lys Asp Leu Ala Arg His Arg Met Gln Gly Asp Pro				
289	294	299	304	
gat gac acg tcg cac cgt ggg cac ccg ctc tgc aag ttc tgt gac gag				960
Asp Asp Thr Ser His Arg Gly His Pro Leu Cys Lys Phe Cys Asp Glu				
305	310	315	320	
cgc tac ctg gac aat gat gag ctg ctt aag cac ctg cgc cgc gac cac				1008
Arg Tyr Leu Asp Asn Asp Glu Leu Leu Lys His Leu Arg Arg Asp His				
321	326	331	336	

tac ttc tgc cac ttc tgc gac tcg gac ggg gcc cag gac tac tac agc	1056
Tyr Phe Cys His Phe Cys Asp Ser Asp Gly Ala Gln Asp Tyr Tyr Ser	
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gac tat gcc tac ctg cgt gag cac ttc cgg gag aag cac ttt ctg tgt	1104
Asp Tyr Ala Tyr Leu Arg Glu His Phe Arg Glu Lys His Phe Leu Cys	
353 358 363 368	
gag gaa ggc cgc tgc agc acg gag cag ttc acc cac gcc ttc cgc acc	1152
Glu Glu Gly Arg Cys Ser Thr Glu Gln Phe Thr His Ala Phe Arg Thr	
369 374 379 384	
gag atc gac ctc aag gcc cac agg acg gcc tgc cac agt cgc agc cgc	1200
Glu Ile Asp Leu Lys Ala His Arg Thr Ala Cys His Ser Arg Ser Arg	
385 390 395 400	
gcc gag gca cgc cag aac cgc cac atc gac ctg cag ttc agc tac gcg	1248
Ala Glu Ala Arg Gln Asn Arg His Ile Asp Leu Gln Phe Ser Tyr Ala	
401 406 411 416	
cca cgg cac tcg cgc cgg aac gag ggt gag cag gca cct ggc ctg gat	1296
Pro Arg His Ser Arg Arg Asn Glu Gly Glu Gln Ala Pro Gly Leu Asp	
417 422 427 432	
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Ala Pro Arg Pro Val Pro Pro Ile Val Val Pro Gly Ser Arg Glu Val	
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Thr Gly Cys Leu Leu Ala Ala Gly Val Val Gly Gly Glu Asp Tyr Glu	
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Glu Val Asp Arg Tyr Ser Arg Gln Gly Arg Val Ala Arg Ala Gly Thr	
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Arg Gly Ala Gln Gln Ser Arg Arg Gly Ser Trp Arg Tyr Lys Arg Glu	
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Glu Glu Asp Arg Glu Val Ala Ala Ala Val Arg Ala Ser Val Ala Ala	
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Gln Gln Gln Glu Glu Ala Arg Arg Ser Glu Asp Gln Glu Glu Gly Gly	
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Glu Thr Ser Thr Asn Gly Pro Val Ser Gln Glu Ala Phe Ser Val Thr	
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ggc cca gcc gcc cca ggc gcc ctc cca cca ccc agc ccg aag ctc aag	1776
Gly Pro Ala Ala Pro Gly Ala Leu Pro Pro Pro Ser Pro Lys Leu Lys	
577 582 587 592	
gac gaa gac ttc ccc agc ctc tct gcc tcc act tcc tcc tcc tgc tcc	1824
Asp Glu Asp Phe Pro Ser Leu Ser Ala Ser Thr Ser Ser Ser Cys Ser	
593 598 603 608	
act gca gca acc ccg ggc cct gtg ggg ttg gcg ctg ccg tac gcc atc	1872
Thr Ala Ala Thr Pro Gly Pro Val Gly Leu Ala Leu Pro Tyr Ala Ile	
609 614 619 624	
cct gcc aga ggc agg agt gcc ttc cag gag gag gac ttc ccc gcc ctg	1920
Pro Ala Arg Gly Arg Ser Ala Phe Gln Glu Glu Asp Phe Pro Ala Leu	
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Val Ser Ser Val Pro Lys Pro Gly Thr Ala Pro Thr Ser Leu Val Ser	
641 646 651 656	
gcc tgg aac agc agc agt agc agc aag aag gta gca cag ccc cca ctc	2016
Ala Trp Asn Ser Ser Ser Ser Ser Lys Lys Val Ala Gln Pro Pro Leu	
657 662 667 672	
tcg gcg cag gct acc ggc agc ggc cag ccc acc agg aag gct ggg aag	2064
Ser Ala Gln Ala Thr Gly Ser Gly Gln Pro Thr Arg Lys Ala Gly Lys	
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Gly Ser Arg Gly Gly Arg Lys Gly Gly Pro Pro Phe Thr Gln Glu Glu	
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Glu Glu Asp Gly Gly Pro Ala Leu Gln Glu Leu Leu Ser Thr Arg Pro	
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Thr Gly Ser Val Ser Ser Thr Leu Gly Leu Ala Ser Ile Gln Pro Ser	
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Lys Val Gly Lys Lys Lys Lys Val Gly Ser Glu Lys Pro Gly Thr Thr	
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Leu Pro Gln Pro Pro Pro Ala Thr Cys Pro Pro Gly Ala Leu Gln Ala	
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ccg gaa gct cct gcc agc aga gcc gag ggg cca gtt gcc gtc gtc gtt	2352
Pro Glu Ala Pro Ala Ser Arg Ala Glu Gly Pro Val Ala Val Val Val	
769 774 779 784	
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Asn Gly His Thr Glu Gly Pro Ala Pro Ala Arg Ser Ala Pro Lys Glu	
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Pro Pro Gly Leu Pro Arg Pro Leu Gly Ser Phe Pro Cys Pro Thr Pro	
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Pro Pro Pro Gly Phe Ser Ala Val Val Leu Leu Lys Gly Thr Pro Pro	
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Pro Pro Pro Pro Gly Leu Val Pro Pro Ile Ser Lys Pro Pro Pro Gly	
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Phe Ser Gly Leu Leu Pro Ser Pro His Pro Ala Cys Val Pro Ser Pro	
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Ala Thr Thr Thr Thr Thr Lys Ala Pro Arg Leu Leu Pro Ala Pro Arg	
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Ala Tyr Leu Val Pro Glu Asn Phe Arg Glu Arg Asn Leu Gln Leu Ile	
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Gln Ser Ile Arg Asp Phe Leu Gln Ser Asp Glu Ala Arg Phe Ser Glu	
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Phe Lys Ser His Ser Gly Glu Phe Arg Gln Gly Leu Ile Ser Ala Ala	
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Gln Tyr Tyr Lys Ser Cys Arg Asp Leu Leu Gly Glu Asn Phe Gln Lys	
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Val Phe Asn Glu Leu Leu Val Leu Leu Pro Asp Thr Ala Lys Gln Gln	
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Glu Leu Leu Ser Ala His Thr Asp Phe Cys Asn Arg Glu Lys Pro Leu	
977 982 987 992	
agc acc aag tcc aag aag aac aag aag agc gcg tgg cag gcc acc acc	3024
Ser Thr Lys Ser Lys Lys Asn Lys Lys Ser Ala Trp Gln Ala Thr Thr	
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Gln Gln Ala Gly Leu Asp Cys Arg Val Cys Pro Thr Cys Gln Gln Val	

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Leu Ala His Gly Asp Ala Ser Ser His Gln Ala Leu His Ala Ala Arg				
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Asp Asp Asp Phe Pro Ser Leu Gln Ala Ile Ala Arg Ile Ile Thr *				
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			atg	
			Met	
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tgg gag atc tgg ggt cct tgg cac cgc tgg gag agt ttc agc ctg gaa				343
Trp Glu Ile Trp Gly Pro Trp His Arg Trp Glu Ser Phe Ser Leu Glu				
2	7	12	17	
gga gaa tgg ccc tcc cgc att cca gag cct tcc cct gac agc acc aaa				391
Gly Glu Trp Pro Ser Arg Ile Pro Glu Pro Ser Pro Asp Ser Thr Lys				
18	23	28	33	

gga acc agt gga aag ggt tgc agg aca gtc aca gga gca gtg cac aga	439
Gly Thr Ser Gly Lys Gly Cys Arg Thr Val Thr Gly Ala Val His Arg	
34 39 44 49	
cat ctg aac cat gtt gca ggt atc ata cct tgg gtt ctt cat agc cag	487
His Leu Asn His Val Ala Gly Ile Ile Pro Trp Val Leu His Ser Gln	
50 55 60 65	
ctg aaa cca aca gca gcc act gcc cag gac cag tgg acc agt caa caa	535
Leu Lys Pro Thr Ala Ala Thr Ala Gln Asp Gln Trp Thr Ser Gln Gln	
66 71 76 81	
tac cca gac cac cca aca cgg ctg atc cta cag tga aatc aagccactgc	585
Tyr Pro Asp His Pro Thr Arg Leu Ile Leu Gln *	
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Met Glu His	



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Leu Leu Pro Ser Leu Leu Ser Leu Ala Ser Asp Pro Val Pro Asn Val	
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Arg Val Leu Leu Ala Lys Ala Leu Arg Gln Met Leu Leu Glu Lys Ala	
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Tyr Phe Arg Asn Ala Gly Asn Pro His Leu Glu Val Ile Glu Glu Thr	
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Ile Leu Ala Leu Gln Ser Asp Arg Asp Gln Asp Val Ser Phe Phe Ala	
52 57 62 67	
gcc cta gaa cca aag cgg cgg aat atc ata gac act gct gta cta gaa	954
Ala Leu Glu Pro Lys Arg Arg Asn Ile Ile Asp Thr Ala Val Leu Glu	
68 73 78 83	
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Lys Gln Asn *	
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<400> 236

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cccgggaggc cgcggccact cccccccggg ccggcgcggc gggggaggcg gagg   atg      177
                                   Met
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gcc agt ggc agc ggc ggc agc ttc gcg tcc ccg ggc cgc ttg ttc ccc      273
Ala Ser Gly Ser Gly Gly Ser Phe Ala Ser Pro Gly Arg Leu Phe Pro
  18              23              28              33

ggg gcg ccc ccg acg gcc gcg gcc ggc agc atg atg aag aag gac gcg      321
Gly Ala Pro Pro Thr Ala Ala Ala Gly Ser Met Met Lys Lys Asp Ala
  34              39              44              49

ctg acg ctg agc ctg agt gag cag gtg gcg gca gcg ctc aag cct gcg      369
Leu Thr Leu Ser Leu Ser Glu Gln Val Ala Ala Ala Leu Lys Pro Ala
  50              55              60              65

gcc gcg ccc gcc tcc tac ccc cct gcg cgc cga cgg cgc ccc cag gcg      417
Ala Ala Pro Ala Ser Tyr Pro Pro Ala Arg Arg Arg Arg Pro Gln Arg
  66              71              76              81

ggc acc ccc cga cgg cct gct cgc ctc tcc cga cct ggg gct gct gaa      465
Gly Thr Pro Arg Arg Pro Ala Arg Leu Ser Arg Pro Gly Ala Ala Glu
  82              87              92              97

gct ggc ctc ccc cga gct cga gcg cct cat cat cca gtc caa cgg gct      513
Ala Gly Leu Pro Arg Ala Arg Ala Pro His His Pro Val Gln Arg Ala
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ggt cac cac cac gcc gac gag ctc aca gtt cct cta ccc caa ggt ggc      561
Gly His His His Ala Asp Glu Leu Thr Val Pro Leu Pro Gln Gly Gly
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ggc cag cga gga gca gga gtt cgc cga ggg ctt cgt caa ggc cct gga      609
Gly Gln Arg Gly Ala Gly Val Arg Arg Gly Leu Arg Gln Gly Pro Gly
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gga ttt aca caa gca gaa cca gct cgg cgc ggg cgc ggc cgc tgc cgc      657
Gly Phe Thr Gln Ala Glu Pro Ala Arg Arg Gly Arg Gly Arg Cys Arg
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cgc cgc cgc cgc cgc cgg ggg gcc ctc ggg cac ggc cac ggg ctc cgc      705

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Ala	Pro	Arg	Arg	Ala	Gly	Pro	Gly	Gly	Gly	Arg	Ala	Arg	Ser	Ala	Cys	
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Leu	Arg	Glu	Pro	Glu	Gln	Leu	Arg	Gly	Arg	Arg	Arg	Gly	Arg	Gly	Gly	
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Arg	Arg	Asp	Gly	Arg	Leu	Arg	Cys	Arg	Thr	Cys	Ala	Leu	Pro	Ala	Ala	
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Val	Val	Ala	His	Arg	His	Gly	His	Ala	Gly	Ala	His	Gln	Gly	Gly	Ala	
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Gln	Ala	Ala	Ala	Gln	Pro	His	Arg	Arg	Leu	Gln	Val	Pro	Gln	Ala	Gln	
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Gly	Ala	Ala	Gln	Ala	Glu	Ser	Pro	Gln	Pro	Arg	Gln	Gln	Arg	Leu	Pro	
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Ala	Ala	Ala	Pro	Ala	Pro	Gly	Ala	Arg	Val	Leu	Ser	Pro	Arg	Ala	Gly	
338					343					348					353	
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Arg	Met	Arg	Gly	His	Pro	Pro	Gln	Gly	Ala	Gly	Ser	Arg	Gly	Gly	Val	
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Ala Gly Pro Pro Ala Pro Gly Gly Gly Glu Arg Met Thr Pro Pro Pro				
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Ser Arg Cys Leu Phe Pro Pro Arg Gly Arg Pro Val Leu His Lys Pro				
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gcg cgt ctc ggc tgc ccc ttt gta cac cgc gcc gcg gaa ggg ggc tcc				1569
Ala Arg Leu Gly Cys Pro Phe Val His Arg Ala Ala Glu Gly Gly Ser				
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Glu Gly Ala Gln Pro Gln Thr Leu Pro Phe Leu Tyr Phe Tyr Phe Phe				
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Phe Phe Phe Leu Trp Lys Arg Glu Glu Gln Ser Val Arg Phe Cys Pro				
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Ile Tyr Val Ser Thr Arg Glu Gln Thr Leu Val Val Cys Val Cys Val				
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Phe Leu Cys Trp Phe Phe Lys Glu Met Gly Arg Arg Lys Lys Asn Ser				
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Pro Pro Leu Ser Ser Ile Ser Leu Pro Pro Ser Val Leu Ser Thr Gly				
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Met Glu His Trp Ile Ser Gln Ala Ile His Gly Ser Thr Thr Ser Thr	
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Thr Ser Ser Ser Ser Thr Gln Ser Gly Gly Ser Gly Ala Ala His Arg	
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Leu Ala Asp Val Met Ala Gln Thr His Ile Glu Asn His Ser Ala Pro	
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Pro Gln Gly Ser Thr Gly Ser Arg Thr Ala Pro Lys Tyr Gly Asn Ala	
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Glu Leu Met Glu Thr Gly Asp Gly Val Pro Val Ser Ser Arg Val Ser	
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Ala Lys Ile Gln Gln Leu Val Asn Thr Leu Lys Arg Pro Lys Arg Pro	
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Pro Leu Arg Glu Phe Phe Val Asp Asp Phe Glu Glu Leu Leu Glu Val	
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Gln Gln Pro Asp Pro Asn Gln Pro Lys Pro Glu Gly Ala Gln Met Leu	
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gcc atg cgc gga gag cag ctg ggc gtg gtc acg aac tgg ccg ccg tcg	537
Ala Met Arg Gly Glu Gln Leu Gly Val Val Thr Asn Trp Pro Pro Ser	
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Leu Glu Ala Ala Leu Gln Arg Trp Gly Thr Ile Ser Pro Lys Ala Pro	
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Cys Leu Thr Thr Met Asp Thr Asn Gly Lys Pro Leu Tyr Ile Leu Thr	
177 182 187 192	
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Tyr Gly Lys Leu Trp Thr Arg Ser Met Lys Val Ala Tyr Ser Ile Leu	
193 198 203 208	

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His Lys Leu Gly Thr Lys Gln Glu Pro Met Val Arg Pro Gly Asp Arg	
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Val Ala Leu Val Phe Pro Asn Asn Asp Pro Ala Ala Phe Met Ala Ala	
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401 406 411 416	
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Ser Trp Ile Gln Lys Val Cys Gln Tyr Lys Ala Lys Val Ala Cys Val	
417 422 427 432	
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Asp	Ile	Asn	Leu	Ser	Ser	Leu	Arg	Met	Leu	Ile	Val	Ala	Asp	Gly	Ala		
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aac	ccc	tgg	tct	att	tct	tct	tgc	gat	gca	ttt	ctc	aat	gtc	ttc	caa	1497	
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Ile	Arg	Val	Asp	Ser	Glu	Glu	Lys	Leu	Ser	Val	Leu	Thr	Val	Gln	Asp		
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Cys	Ala	Val	Ala	Thr	Gly	Thr	Ser	Tyr	Tyr	Gly	Leu	Ser	Gly	Met	Thr		
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Lys	Asn	Thr	Phe	Glu	Val	Phe	Pro	Met	Thr	Ser	Ser	Gly	Ala	Pro	Ile		
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Gly	Gly	Leu	Val	Phe	Val	Val	Gly	Lys	Met	Asp	Gly	Leu	Met	Val	Val		
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agc	ggg	cgc	agg	cac	aac	gcc	gac	gac	atc	gtg	gcc	act	gcg	ctg	gcc	2025	
Ser	Gly	Arg	Arg	His	Asn	Ala	Asp	Asp	Ile	Val	Ala	Thr	Ala	Leu	Ala		
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Val	Glu	Pro	Met	Lys	Phe	Val	Tyr	Arg	Gly	Arg	Ile	Ala	Val	Phe	Ser		

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Pro Asp Ser Thr Glu Glu Asp Ser Phe Gln Trp Met Ser Arg Val Leu				
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Gln Ala Ile Asp Ser Ile His Gln Val Gly Val Tyr Cys Leu Ala Leu				
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Val Leu Met Cys Pro His Thr Cys Val Thr Asn Leu Pro Lys Pro Arg				
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His Lys Arg Ala Glu Lys Ile Ala Val Met Leu Met Glu Arg Gly His				
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Leu Ile Ala Ala Phe Tyr Gly Cys Leu Tyr Ala Gly Cys Val Pro Ile				
881	886	891	896	



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Val Lys Met Ile Val Glu Val Ser Arg Ser Ala Cys Leu Met Thr Thr	
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Val Pro Arg Arg Pro Pro Ala His Ile Ser Ser Val Arg Gln Ala Ser	
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acc cag gtg cca cgc acg gtg cct cat acc cag aga gta gcc aac att	1411
Thr Gln Val Pro Arg Thr Val Pro His Thr Gln Arg Val Ala Asn Ile	
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Gly Thr Gln Thr Thr Gly Pro Ser Gly Val Gly Cys Cys Thr Pro Gly	
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Arg Val Gln Glu Pro Ala Val His Ile Pro Gly Gln Glu Pro Leu Thr	
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Ala Ser Met Leu Ala Ala Pro Leu His Glu Gln Lys Gln Met Ile	
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ggg gag cgt ctc tac ccc ctt atc cat gat gtc cac acc cag ctg gct	1651
Gly Glu Arg Leu Tyr Pro Leu Ile His Asp Val His Thr Gln Leu Ala	
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Gly Lys Ile Thr Gly Met Leu Leu Glu Ile Asp Asn Ser Glu Leu Leu	
119 124 129 134	
ctc atg ctg gag tct cca gaa tcc ctc cat gcc aag ata gac gag gca	1747
Leu Met Leu Glu Ser Pro Glu Ser Leu His Ala Lys Ile Asp Glu Ala	
135 140 145 150	

gtg gcc gtg ctg cag gca cac cag gct atg gag cag ccg aag gcg tac 1795  
Val Ala Val Leu Gln Ala His Gln Ala Met Glu Gln Pro Lys Ala Tyr  
151 156 161 166

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Met His \*  
167

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ccaacttggt gggctcccca aggaaacccc tttgaaacca atg gat gca ttc acg 415  
Met Asp Ala Phe Thr  
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Gly Ser Gly Leu Lys Arg Lys Phe Asp Asp Val Asp Val Gly Ser Ser  
6 11 16 21

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Val Ser Asn Ser Asp Asp Glu Ile Ser Ser Ser Asp Ser Ala Asp Ser  
22 27 32 37

tgc gac agc ctc aat cct cct acc act gcc agc ttc aca ccc aca tcc 559  
Cys Asp Ser Leu Asn Pro Pro Thr Thr Ala Ser Phe Thr Pro Thr Ser  
38 43 48 53

atc ctg aag cgg cag aag cag ctg cgg agg aag aat gta cgc ttt gac 607

Ile	Leu	Lys	Arg	Gln	Lys	Gln	Leu	Arg	Arg	Lys	Asn	Val	Arg	Phe	Asp	
54					59					64					69	
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Gln	Val	Thr	Val	Tyr	Tyr	Phe	Ala	Arg	Arg	Gln	Gly	Phe	Thr	Ser	Val	
70					75					80					85	
ccc	agc	cag	ggg	ggg	agc	tct	ctg	ggc	atg	gcc	cag	cgc	cat	aac	tct	703
Pro	Ser	Gln	Gly	Gly	Ser	Ser	Leu	Gly	Met	Ala	Gln	Arg	His	Asn	Ser	
86					91					96					101	
gta	cgg	agc	tat	aca	ctc	tgt	gag	ttt	gcc	cag	gaa	cag	gag	gtg	aac	751
Val	Arg	Ser	Tyr	Thr	Leu	Cys	Glu	Phe	Ala	Gln	Glu	Gln	Glu	Val	Asn	
102					107					112					117	
cat	cga	gag	att	ctg	cgt	gag	cac	ctg	aag	gaa	gag	aaa	ctc	cat	gcc	799
His	Arg	Glu	Ile	Leu	Arg	Glu	His	Leu	Lys	Glu	Glu	Lys	Leu	His	Ala	
118					123					128					133	
aag	aaa	atg	aag	ctg	acc	aag	aat	ggg	aca	gtg	gag	tcg	gtg	gag	gct	847
Lys	Lys	Met	Lys	Leu	Thr	Lys	Asn	Gly	Thr	Val	Glu	Ser	Val	Glu	Ala	
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gat	ggc	ctg	acg	ctg	gat	gat	gtg	tca	gat	gaa	gat	att	gat	gtg	gaa	895
Asp	Gly	Leu	Thr	Leu	Asp	Asp	Val	Ser	Asp	Glu	Asp	Ile	Asp	Val	Glu	
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aat	gtg	gag	gtg	gat	gat	tac	ttc	ttc	ctg	cag	cct	ctg	ccc	acc	aaa	943
Asn	Val	Glu	Val	Asp	Asp	Tyr	Phe	Phe	Leu	Gln	Pro	Leu	Pro	Thr	Lys	
166					171					176					181	
cgg	cga	cgg	gcc	ctg	ctg	agg	gct	tct	ggg	gtc	cac	cgt	att	gat	gct	991
Arg	Arg	Arg	Ala	Leu	Leu	Arg	Ala	Ser	Gly	Val	His	Arg	Ile	Asp	Ala	
182					187					192					197	
gaa	gag	aag	caa	gaa	ctt	cga	gcc	atc	cgc	ctg	tca	cgg	gaa	gaa	tgt	1039
Glu	Glu	Lys	Gln	Glu	Leu	Arg	Ala	Ile	Arg	Leu	Ser	Arg	Glu	Glu	Cys	
198					203					208					213	
ggg	tgt	gac	tgc	cga	ctg	tat	tgt	gac	cca	taa	gcgtgtgc	ctgcagccag				1090
Gly	Cys	Asp	Cys	Arg	Leu	Tyr	Cys	Asp	Pro	*						
214					219					224						
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 His Leu Ala Gln Ala His Gly Glu Met Leu Ser Gly Ile Thr Tyr Ile  
 17 22 27 32

aag ttt gtc aaa gtc cct ggg gaa ctg gtt act gca aag atg gct gaa 144  
 Lys Phe Val Lys Val Pro Gly Glu Leu Val Thr Ala Lys Met Ala Glu  
 33 38 43 48

ata aga gag cag tgt gtg gca ggc ccc cgt gga gga tca acg cag tgg 192  
 Ile Arg Glu Gln Cys Val Ala Gly Pro Arg Gly Gly Ser Thr Gln Trp  
 49 54 59 64

ctg aac acc ggg aag gaa ctg gca ctt gga gtc tgg aca ttt gaa act 240  
 Leu Asn Thr Gly Lys Glu Leu Ala Leu Gly Val Trp Thr Phe Glu Thr  
 65 70 75 80

tgg gag aga ggc tca cca ctt ttg agt cca cgg ggc ttg cac ctc cac 288  
 Trp Glu Arg Gly Ser Pro Leu Leu Ser Pro Arg Gly Leu His Leu His  
 81 86 91 96

aag aca aac atc cct agg cca ccc aga gta ggc aag aga gga ggt gaa 336  
 Lys Thr Asn Ile Pro Arg Pro Pro Arg Val Gly Lys Arg Gly Gly Glu  
 97 102 107 112

gcc tcg gga gaa acc cct ccc ttg gca gct ggt tta aga ccc aaa acg 384  
 Ala Ser Gly Glu Thr Pro Pro Leu Ala Ala Gly Leu Arg Pro Lys Thr  
 113 118 123 128

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 Gly Ile Gln Met Pro Leu Arg Glu Gln Trp Tyr Thr Gly Ile Asp Glu  
 129 134 139 144

gat ggg cac atg gtg gag agg cgt gtt ttt gtg tac cag ccc ttc ttc 480  
 Asp Gly His Met Val Glu Arg Arg Val Phe Val Tyr Gln Pro Phe Phe  
 145 150 155 160

tct gcc gac ctc ctc aac tgg aaa aac aat acc cca tcc tat act gaa 528  
 Ser Ala Asp Leu Leu Asn Trp Lys Asn Asn Thr Pro Ser Tyr Thr Glu  
 161 166 171 176

aag ccg caa gct cta att gat ttg ctc caa act att atc cag acc cat 576  
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aac ccc act tgg gct gat tgc cac cag ttg ctc atg ttc ctc ttt aac				624
Asn Pro Thr Trp Ala Asp Cys His Gln Leu Leu Met Phe Leu Phe Asn				
193	198	203	208	
aca gat gaa agg cgg aga gtg ctc caa gca gca act aag tgg cta gag				672
Thr Asp Glu Arg Arg Arg Val Leu Gln Ala Ala Thr Lys Trp Leu Glu				
209	214	219	224	
gaa cat gca ccg gct gat tac caa aac ccc caa gag tat gta agg acc				720
Glu His Ala Pro Ala Asp Tyr Gln Asn Pro Gln Glu Tyr Val Arg Thr				
225	230	235	240	
cag tta ccg gga acc gac ccc cag tgg gac cca aat gaa aga gag gat				768
Gln Leu Pro Gly Thr Asp Pro Gln Trp Asp Pro Asn Glu Arg Glu Asp				
241	246	251	256	
atg caa agg cta aac cga tac agg gaa gct ctc ttg gaa gga tta aag				816
Met Gln Arg Leu Asn Arg Tyr Arg Glu Ala Leu Leu Glu Gly Leu Lys				
257	262	267	272	
agg gga gcc cag aag gcc aca aac gtg gcc att cag gga aaa gaa gaa				864
Arg Gly Ala Gln Lys Ala Thr Asn Val Ala Ile Gln Gly Lys Glu Glu				
273	278	283	288	
agt cca gca caa ttc tac gag agg ctg tgt gag gcc tat tgt atg tat				912
Ser Pro Ala Gln Phe Tyr Glu Arg Leu Cys Glu Ala Tyr Cys Met Tyr				
289	294	299	304	
act ccc ttt gat ccc aat agt cct gaa aat cag cgc atg att aac atg				960
Thr Pro Phe Asp Pro Asn Ser Pro Glu Asn Gln Arg Met Ile Asn Met				
305	310	315	320	
gct tta gtt agt caa agt gca gaa gac att aga aga aaa ctg cag aaa				1008
Ala Leu Val Ser Gln Ser Ala Glu Asp Ile Arg Arg Lys Leu Gln Lys				
321	326	331	336	
cag gct ggg ttt gca ggg atg aac aca tca cag tta tta gaa ata gct				1056
Gln Ala Gly Phe Ala Gly Met Asn Thr Ser Gln Leu Leu Glu Ile Ala				
337	342	347	352	
aac cag gtg ttt gta aac agg gat gca gta agc cct aag gaa aac cgc				1104
Asn Gln Val Phe Val Asn Arg Asp Ala Val Ser Pro Lys Glu Asn Arg				
353	358	363	368	
aga gag aat gaa cat cag gtc cgg cga aat gcc gac ctg tta gct gca				1152
Arg Glu Asn Glu His Gln Val Arg Arg Asn Ala Asp Leu Leu Ala Ala				
369	374	379	384	
gca atc aca ggg gtc ccc cca aag agg caa ggg aag ggg ggc ccc ggg				1200
Ala Ile Thr Gly Val Pro Pro Lys Arg Gln Gly Lys Gly Gly Pro Gly				
385	390	395	400	
aaa gaa att cag cct ggt tgt cag agc ttg cag cgt aat cag tgt gct				1248
Lys Glu Ile Gln Pro Gly Cys Gln Ser Leu Gln Arg Asn Gln Cys Ala				
401	406	411	416	

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Tyr Cys Lys Glu Ile Gly His Trp Lys Asn Lys Cys Pro Gln Leu Lys	
417 422 427 432	
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Gly Lys Gln Gly Asp Ser Glu Gln Glu Asp Pro Asp Lys Glu Glu Gly	
433 438 443 448	
gcc ctg ctc aac ctg gca gaa agg acc ccc aaa gag cct atg gtc agg	1392
Ala Leu Leu Asn Leu Ala Glu Arg Thr Pro Lys Glu Pro Met Val Arg	
449 454 459 464	
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Glu His Ser Val Val Thr Thr Pro Val Ser Pro Leu Ser Lys Lys Thr	
481 486 491 496	
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Ile Asp Ile Ile Gly Ala Thr Gly Val Ser Ala Lys Gln Ala Phe Cys	
497 502 507 512	
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Leu Pro Arg Thr Cys Thr Val Gly Gly His Lys Val Ile His Gln Phe	
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Leu Tyr Met Pro Asp Cys Pro Leu Pro Leu Leu Gly Arg Asp Leu Leu	
529 534 539 544	
agc aaa ctg aga gcc act atc tat ttt aca gag cat ggc tct ttg ctg	1680
Ser Lys Leu Arg Ala Thr Ile Tyr Phe Thr Glu His Gly Ser Leu Leu	
545 550 555 560	
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Leu Lys Leu Pro Gly Thr Gly Val Ile Met Thr Leu Met Val Pro Arg	
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Glu Glu Glu Trp Lys Leu Phe Leu Thr Glu Ser Gly Gln Glu Ile Arg	
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cca gct ctg gct aag tgg tgg cca aga gtg tgg gca gaa gac aac cct	1824
Pro Ala Leu Ala Lys Trp Trp Pro Arg Val Trp Ala Glu Asp Asn Pro	
593 598 603 608	
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Pro Gly Leu Ala Val Asn Gln Ala Pro Val Leu Ile Glu Val Lys Pro	
609 614 619 624	
agg gcc cag ccg gtt agg caa aaa cag tac ccg gtc ccc aga gaa gct	1920
Arg Ala Gln Pro Val Arg Gln Lys Gln Tyr Pro Val Pro Arg Glu Ala	
625 630 635 640	

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Lys Pro Gly Thr Lys Asp Tyr Arg Pro Val Gln Asp Leu Arg Leu Val	
673 678 683 688	
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Leu Leu Gly Leu Leu Pro Ala Glu Asp Ser Trp Phe Thr Cys Leu Asp	
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ctg aaa gat gct ttc ttt agc atc aga tta gcc cct gag agc cag aag	2208
Leu Lys Asp Ala Phe Phe Ser Ile Arg Leu Ala Pro Glu Ser Gln Lys	
721 726 731 736	
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Leu Phe Ala Phe Gln Trp Glu Asp Pro Glu Ser Gly Val Thr Thr Gln	
737 742 747 752	
tac act tgg atc cgg ctt ccc aaa ggg ttc aag aac tcc ccc acc atc	2304
Tyr Thr Trp Ile Arg Leu Pro Lys Gly Phe Lys Asn Ser Pro Thr Ile	
753 758 763 768	
ttc ggg gag gca ttg gct caa gac ctc cag aag ttt ccc acc aga gac	2352
Phe Gly Glu Ala Leu Ala Gln Asp Leu Gln Lys Phe Pro Thr Arg Asp	
769 774 779 784	
cta ggc tgc atg ttg ctc cag tac gtt gat gac ctt ttt ctg gga cac	2400
Leu Gly Cys Met Leu Leu Gln Tyr Val Asp Asp Leu Phe Leu Gly His	
785 790 795 800	
cct acg gca gtc agg tgc gcc aag gga aca gat gct cta ctc cgg cac	2448
Pro Thr Ala Val Arg Cys Ala Lys Gly Thr Asp Ala Leu Leu Arg His	
801 806 811 816	
ctg gag gac tgt ggg tat aag gtg ttc aag aaa aaa gtt cag atc tgc	2496
Leu Glu Asp Cys Gly Tyr Lys Val Phe Lys Lys Lys Val Gln Ile Cys	
817 822 827 832	
cga cag cag gta cgt tac ttg gga ttt act atc cgg cag ggg gag tgc	2544
Arg Gln Gln Val Arg Tyr Leu Gly Phe Thr Ile Arg Gln Gly Glu Cys	
833 838 843 848	
agc ctg gga tca aaa aga aag caa gtc att tgt aat cta ccg gag cct	2592
Ser Leu Gly Ser Lys Arg Lys Gln Val Ile Cys Asn Leu Pro Glu Pro	
849 854 859 864	
aag acc aga agg cag agc cct gtc aag cat gac tgt gta gaa gtg ttg	2640

Lys Thr Arg Arg Gln Ser Pro Val Lys His Asp Cys Val Glu Val Leu	
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Asp Ser Val Tyr Ser Ser Arg Pro Asp Leu Arg Asp Gln Pro Trp Ala	
881 886 891 896	
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Ser Val Asp Trp Val Leu Tyr Val Asp Gly Ser Ser Phe Ile Asn Pro	
897 902 907 912	
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Gln Gly Glu Arg Cys Ala Gly Tyr Ala Val Val Thr Leu Asp Thr Val	
913 918 923 928	
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Val Glu Ala Arg Ser Leu Pro Gln Gly Thr Ser Ala Gln Lys Thr Glu	
929 934 939 944	
ctc att gct tta att tgg gcc tta gaa ctc agt gaa gca cct gat ctt	2880
Leu Ile Ala Leu Ile Trp Ala Leu Glu Leu Ser Glu Ala Pro Asp Leu	
945 950 955 960	
gta cct act tat tct aaa gaa gaa aat gac ttt ctc cag gca gag gga	2928
Val Pro Thr Tyr Ser Lys Glu Glu Asn Asp Phe Leu Gln Ala Glu Gly	
961 966 971 976	
gga caa gtg atg gag gaa gga ttg att cgg tta cca gat ggg aga gta	2976
Gly Gln Val Met Glu Glu Gly Leu Ile Arg Leu Pro Asp Gly Arg Val	
977 982 987 992	
gct gtg cca cag ctg cta gga gct gca gtt gta ctg gct gtc cat gaa	3024
Ala Val Pro Gln Leu Leu Gly Ala Ala Val Val Leu Ala Val His Glu	
993 998 1003 1008	
acc acc cat cta ggt cag gaa tca ctt gaa aag ttg tta ggc tgg tat	3072
Thr Thr His Leu Gly Gln Glu Ser Leu Glu Lys Leu Leu Gly Trp Tyr	
1009 1014 1019 1024	
ttc tac atc tgc cat ttg tca gcc ctt gcc aaa acg gtg acc cag cgg	3120
Phe Tyr Ile Ser His Leu Ser Ala Leu Ala Lys Thr Val Thr Gln Arg	
1025 1030 1035 1040	
tgt gtt acc tgc cga cag cat aat gcg agg caa ggt cta gct gtt cca	3168
Cys Val Thr Cys Arg Gln His Asn Ala Arg Gln Gly Leu Ala Val Pro	
1041 1046 1051 1056	
cct ggc ata caa gct tat gga gaa gcc ccc ttt gaa gat ctg gat cca	3216
Pro Gly Ile Gln Ala Tyr Gly Glu Ala Pro Phe Glu Asp Leu Asp Pro	
1057 1062 1067 1072	
ggt gga ctt cac aga gat gcc aaa gtg tgg aga ttt gga ctg cct tta	3264
Gly Gly Leu His Arg Asp Ala Lys Val Trp Arg Phe Gly Leu Pro Leu	
1073 1078 1083 1088	
tgg atc ggc tca gat aac ggg ccg gca ttt gtg gct gac ttg gta cag	3312
Trp Ile Gly Ser Asp Asn Gly Pro Ala Phe Val Ala Asp Leu Val Gln	

1089	1094	1099	1104	
aag atg gca aag gta ttg ggg atc aca tgg aaa ctg cat gct gcc tac				3360
Lys Met Ala Lys Val Leu Gly Ile Thr Trp Lys Leu His Ala Ala Tyr				
1105	1110	1115	1120	
cgg cct cag agt tcc gga aag gtg gag cag atg aat cgg act atc aaa				3408
Arg Pro Gln Ser Ser Gly Lys Val Glu Gln Met Asn Arg Thr Ile Lys				
1121	1126	1131	1136	
aat agt tta ggg aaa aac aaa aag gac cca gtt tat ctt cag aag ggg				3456
Asn Ser Leu Gly Lys Asn Lys Lys Asp Pro Val Tyr Leu Gln Lys Gly				
1137	1142	1147	1152	
gaa gcc aac ccc tcc tgt gct gcc ggt cac tgt aac cca cta gaa cta				3504
Glu Ala Asn Pro Ser Cys Ala Ala Gly His Cys Asn Pro Leu Glu Leu				
1153	1158	1163	1168	
ata att acc aat ccc cta gat ccc cgt tgg aaa aac gga gaa cgt gta				3552
Ile Ile Thr Asn Pro Leu Asp Pro Arg Trp Lys Asn Gly Glu Arg Val				
1169	1174	1179	1184	
acc ctg ggg att gat ggg aca ggg tta aac ccc caa gtt gcc att tta				3600
Thr Leu Gly Ile Asp Gly Thr Gly Leu Asn Pro Gln Val Ala Ile Leu				
1185	1190	1195	1200	
att aga ggg gag gtc ccc aag cgc tct ccc aaa cca gta ttt caa acc				3648
Ile Arg Gly Glu Val Pro Lys Arg Ser Pro Lys Pro Val Phe Gln Thr				
1201	1206	1211	1216	
ttt tat gag gag ctg aat ctg cca gca cca gaa ctt cca aaa aag aca				3696
Phe Tyr Glu Glu Leu Asn Leu Pro Ala Pro Glu Leu Pro Lys Lys Thr				
1217	1222	1227	1232	
aaa aat ttg ttt ctc caa tta gca gaa aat gta gct cat tcc ctt aaa				3744
Lys Asn Leu Phe Leu Gln Leu Ala Glu Asn Val Ala His Ser Leu Lys				
1233	1238	1243	1248	
gtt act tct tgt tat gta tgc ggg gga acc act atc gga gac cga tgg				3792
Val Thr Ser Cys Tyr Val Cys Gly Gly Thr Thr Ile Gly Asp Arg Trp				
1249	1254	1259	1264	
cct tgg gaa gcc cga gag ttg gtg cct act gat cca gct cct gac ata				3840
Pro Trp Glu Ala Arg Glu Leu Val Pro Thr Asp Pro Ala Pro Asp Ile				
1265	1270	1275	1280	
att cca gtt cag aag gcc caa gct agc aac ttc tgg gtc tta aaa acc				3888
Ile Pro Val Gln Lys Ala Gln Ala Ser Asn Phe Trp Val Leu Lys Thr				
1281	1286	1291	1296	
tca att att gga caa tac tgt ata gct aga gaa ggg aaa gac ttt atc				3936
Ser Ile Ile Gly Gln Tyr Cys Ile Ala Arg Glu Gly Lys Asp Phe Ile				
1297	1302	1307	1312	
atc cct gta gga aag ctt aat tgt ata gga cag aag ttg tat aac agc				3984
Ile Pro Val Gly Lys Leu Asn Cys Ile Gly Gln Lys Leu Tyr Asn Ser				
1313	1318	1323	1328	

aca aca aag aca att act tgt tgg ggc cta aac cac act gaa aag aat	4032
Thr Thr Lys Thr Ile Thr Cys Trp Gly Leu Asn His Thr Glu Lys Asn	
1329 1334 1339 1344	
cca ttt agt aaa ttt tct aag tta aaa act gct tgg gct cat cca gaa	4080
Pro Phe Ser Lys Phe Ser Lys Leu Lys Thr Ala Trp Ala His Pro Glu	
1345 1350 1355 1360	
tct cat cag gac tgg atg gct ccc gct gga cta tac tgg ata tgt ggg	4128
Ser His Gln Asp Trp Met Ala Pro Ala Gly Leu Tyr Trp Ile Cys Gly	
1361 1366 1371 1376	
cac aga gcc tat att cgg tta cct gat aaa tgg gca ggc agt tgt gtt	4176
His Arg Ala Tyr Ile Arg Leu Pro Asp Lys Trp Ala Gly Ser Cys Val	
1377 1382 1387 1392	
att ggc act att aag ctg tgc ttt ttc tta tta ccc ata aaa acg ggt	4224
Ile Gly Thr Ile Lys Leu Cys Phe Phe Leu Leu Pro Ile Lys Thr Gly	
1393 1398 1403 1408	
gag ctc cta ggt ttc ccc atc tat gcc tcc caa gaa aag aga ggc ata	4272
Glu Leu Leu Gly Phe Pro Ile Tyr Ala Ser Gln Glu Lys Arg Gly Ile	
1409 1414 1419 1424	
gtt ata gga aac tgg aaa gat aat gag tgg ccc cct gaa agg atc ata	4320
Val Ile Gly Asn Trp Lys Asp Asn Glu Trp Pro Pro Glu Arg Ile Ile	
1425 1430 1435 1440	
cag tat tat ggg cct gcc aca tgg gca caa gac ggc tca tgg gga tac	4368
Gln Tyr Tyr Gly Pro Ala Thr Trp Ala Gln Asp Gly Ser Trp Gly Tyr	
1441 1446 1451 1456	
cga acc ccc atc tac atg ctc aat cgg atc ata cgg ttg cag gcc atc	4416
Arg Thr Pro Ile Tyr Met Leu Asn Arg Ile Ile Arg Leu Gln Ala Ile	
1457 1462 1467 1472	
tta aaa ata att act aat gaa act ggc aga gct ttg act gtt ttg gct	4464
Leu Lys Ile Ile Thr Asn Glu Thr Gly Arg Ala Leu Thr Val Leu Ala	
1473 1478 1483 1488	
tgg caa gaa acc caa atg agg aat gct atc tat cag aat aga ctg gcc	4512
Trp Gln Glu Thr Gln Met Arg Asn Ala Ile Tyr Gln Asn Arg Leu Ala	
1489 1494 1499 1504	
ttg gac tac ttg cta gca gct gaa gga gga gtt tgt gga aac ttt aac	4560
Leu Asp Tyr Leu Leu Ala Ala Glu Gly Gly Val Cys Gly Asn Phe Asn	
1505 1510 1515 1520	
tta acc aat tgc tgc cta caa ata gat gat caa gga cag gtg gtt gaa	4608
Leu Thr Asn Cys Cys Leu Gln Ile Asp Asp Gln Gly Gln Val Val Glu	
1521 1526 1531 1536	
aac ata gtc agg gac atg aca aag gtg gca cat gtg cct gta cag att	4656
Asn Ile Val Arg Asp Met Thr Lys Val Ala His Val Pro Val Gln Ile	
1537 1542 1547 1552	

aaa ctg tac acg agt tta atc ctg agt ctt tat ttg gaa aat ggt ttc 4704  
 Lys Leu Tyr Thr Ser Leu Ile Leu Ser Leu Tyr Leu Glu Asn Gly Phe  
 1553 1558 1563 1568

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 Gln Leu Trp Glu Asp Leu Lys Pro Ser Leu Ser Thr Ser Asn Cys Pro  
 1569 1574 1579 1584

aag aat aaa gat aag gat gaa gac caa tct gaa ctg ctt act gct gac 4800  
 Lys Asn Lys Asp Lys Asp Glu Asp Gln Ser Glu Leu Leu Thr Ala Asp  
 1585 1590 1595 1600

aga ggg ggc tgt ttt ggg gaa atg gca gtc aga act ccc tca gag gcc 4848  
 Arg Gly Gly Cys Phe Gly Glu Met Ala Val Arg Thr Pro Ser Glu Ala  
 1601 1606 1611 1616

tat cta aag gtt ccc agc aga aga agc cat cgt cca aag ctc cgg ttg 4896  
 Tyr Leu Lys Val Pro Ser Arg Arg Ser His Arg Pro Lys Leu Arg Leu  
 1617 1622 1627 1632

aat gac tgt ttg gag ttt gat ggc ctg aag gca aga aca gac aaa ctg 4944  
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 Leu Glu Asp Pro Asn Ser Arg Pro Arg Arg Pro Met Ser Cys Thr Ile  
 14 19 24 29

gag aag atc ctg aca gac gcc aag acg ctg ctg gag agg cta cgg gag 144  
 Glu Lys Ile Leu Thr Asp Ala Lys Thr Leu Leu Glu Arg Leu Arg Glu  
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cac gat gcg gcc gcc gag tcg ctg gtg gat cag tcg gcg gcg ctg cac 192  
 His Asp Ala Ala Ala Glu Ser Leu Val Asp Gln Ser Ala Ala Leu His  
 46 51 56 61

cgg cgg gta gca gct atg cgg gag gcg ggg aca gcg ctt ccg gac cag	240
Arg Arg Val Ala Ala Met Arg Glu Ala Gly Thr Ala Leu Pro Asp Gln	
62 67 72 77	
tat caa gag gat gca tcc gat atg aag gac atg tcc aaa tac aaa cct	288
Tyr Gln Glu Asp Ala Ser Asp Met Lys Asp Met Ser Lys Tyr Lys Pro	
78 83 88 93	
cac att ctg ctg tcc caa gag aac aca cag att aga gac ttg caa cag	336
His Ile Leu Leu Ser Gln Glu Asn Thr Gln Ile Arg Asp Leu Gln Gln	
94 99 104 109	
gaa aac aga gag cta tgg att tcc ttg gag gaa cac <sup>3</sup> cag gat gct ttg	384
Glu Asn Arg Glu Leu Trp Ile Ser Leu Glu Glu His Gln Asp Ala Leu	
110 115 120 125	
gaa ctt atc atg agc aaa tat cgg aaa cag atg tta cag tta atg gtt	432
Glu Leu Ile Met Ser Lys Tyr Arg Lys Gln Met Leu Gln Leu Met Val	
126 131 136 141	
gct aaa aaa gcg gtg gat gct gaa cca gtc ctg aaa gct cac cag tct	480
Ala Lys Lys Ala Val Asp Ala Glu Pro Val Leu Lys Ala His Gln Ser	
142 147 152 157	
cac tct gca gaa att gag agt cag att gac aga atc tgt gaa atg gga	528
His Ser Ala Glu Ile Glu Ser Gln Ile Asp Arg Ile Cys Glu Met Gly	
158 163 168 173	
gaa gtg atg agg aaa gca gtt cag gtg gat gat gac cag ttt tgt aag	576
Glu Val Met Arg Lys Ala Val Gln Val Asp Asp Asp Gln Phe Cys Lys	
174 179 184 189	
att cag gaa aaa tta gcc caa tta gag ctt gaa aat aag gaa ctt cga	624
Ile Gln Glu Lys Leu Ala Gln Leu Glu Leu Glu Asn Lys Glu Leu Arg	
190 195 200 205	
gaa tta ttg tcc atc agc agt gag tct ctt caa gcc aga aag gaa aac	672
Glu Leu Leu Ser Ile Ser Ser Glu Ser Leu Gln Ala Arg Lys Glu Asn	
206 211 216 221	
tca atg gac act gct tcc caa gcc atc aaa taa ctgaactc tgaatgatgg	723
Ser Met Asp Thr Ala Ser Gln Ala Ile Lys *	
222 227 232	
ctggagattg tctatcaagg aaggaagtta ctgtcttccc attcaagtac tgtccattaa	783
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a	844

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<213> Homo sapiens

<220>

<221> CDS

<222> (416)..(2353)

<220>

<221> misc\_feature

<222> (1)...(2753)

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<400> 242

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tcccagacct	tcctcttccc	gcagcacgcc	cggcccggcc	cggccgtggc	cctcctcagt	180
gccggccgcc	atggcagagg	cgtccggcgc	ggggaaaatc	tagcccgggg	atttcatgcg	240
gcctagctcg	gttccgcctc	ctcctcgcgc	ggcccagcg	gctgcccgca	ccccagcccc	300
actccgggcc	tccgtgtctc	tcctgtgatc	gcactgacac	ggccgggggg	ttagaatgga	360
acaaactgaa	ggcccgatga	gagaaaggga	aagttaagga	tgctggagca	gaaca atg	418
					Met	
					1	
gat ttc tct ttc tct ttc atg caa ggg atc atg gga aac aca att cag	466					
Asp Phe Ser Phe Ser Phe Met Gln Gly Ile Met Gly Asn Thr Ile Gln						
2 7 12 17						
caa cca cct caa ctc att gac tcc gcc aac atc cgt cag gag gat gcc	514					
Gln Pro Pro Gln Leu Ile Asp Ser Ala Asn Ile Arg Gln Glu Asp Ala						
18 23 28 33						
ttt gat aac aac agt gac att gct gaa gat ggt ggc cag aca cca tat	562					
Phe Asp Asn Asn Ser Asp Ile Ala Glu Asp Gly Gly Gln Thr Pro Tyr						
34 39 44 49						
gaa gct act ttg cag caa ggc ttt cag tac cca gct aca aca gaa gat	610					
Glu Ala Thr Leu Gln Gln Gly Phe Gln Tyr Pro Ala Thr Thr Glu Asp						
50 55 60 65						
ctt cct cca ctc aca aat ggg tat cca tca tca atc agt gtg tat gaa	658					
Leu Pro Pro Leu Thr Asn Gly Tyr Pro Ser Ser Ile Ser Val Tyr Glu						
66 71 76 81						
act caa acc aaa tac cag tca tat aat cag tat cct aat ggg tca gcc	706					
Thr Gln Thr Lys Tyr Gln Ser Tyr Asn Gln Tyr Pro Asn Gly Ser Ala						
82 87 92 97						
aat ggc ttt ggt gca gtt aga aac ttt agc ccc act gac tat tat cat	754					
Asn Gly Phe Gly Ala Val Arg Asn Phe Ser Pro Thr Asp Tyr Tyr His						
98 103 108 113						
tca gaa att cca aac aca aga cca cat gaa att ctg gaa aaa cct tcc	802					

Ser Glu Ile Pro Asn Thr Arg Pro His Glu Ile Leu Glu Lys Pro Ser	
114 119 124 129	
cct cca cag cca cca cct cct cct tcg gta cca caa act gtg att cca	850
Pro Pro Gln Pro Pro Pro Pro Pro Ser Val Pro Gln Thr Val Ile Pro	
130 135 140 145	
aag aag act ggc tca cct gaa att aaa cta aaa ata acc aaa act atc	898
Lys Lys Thr Gly Ser Pro Glu Ile Lys Leu Lys Ile Thr Lys Thr Ile	
146 151 156 161	
cag aat ggc agg gaa ttg ttt gag tct tcc ctt tgt gga gac ctt tta	946
Gln Asn Gly Arg Glu Leu Phe Glu Ser Ser Leu Cys Gly Asp Leu Leu	
162 167 172 177	
aat gaa gta cag gca agt gag cac acg aaa tca aag cat gaa agc aga	994
Asn Glu Val Gln Ala Ser Glu His Thr Lys Ser Lys His Glu Ser Arg	
178 183 188 193	
aaa gaa aag agg aaa aaa agc aac aag cat gac tca tca aga tct gaa	1042
Lys Glu Lys Arg Lys Lys Ser Asn Lys His Asp Ser Ser Arg Ser Glu	
194 199 204 209	
gag cgc aag tca cac aaa atc ccc aaa tta gaa cca gag gaa caa aat	1090
Glu Arg Lys Ser His Lys Ile Pro Lys Leu Glu Pro Glu Glu Gln Asn	
210 215 220 225	
aga cca aat gag agg gtt gac act gta tca gaa aaa cca agg gaa gaa	1138
Arg Pro Asn Glu Arg Val Asp Thr Val Ser Glu Lys Pro Arg Glu Glu	
226 231 236 241	
cca gta cta aaa gag gaa gcc cca gtt cag cca ata cta tct tct gtt	1186
Pro Val Leu Lys Glu Glu Ala Pro Val Gln Pro Ile Leu Ser Ser Val	
242 247 252 257	
cca aca acg gaa gtg tcc act ggt gtt aag ttt cag gtt ggc gat ctt	1234
Pro Thr Thr Glu Val Ser Thr Gly Val Lys Phe Gln Val Gly Asp Leu	
258 263 268 273	
gtg tgg tcc aag gtg gga acc tat cct tgg tgg cct tgt atg gtt tca	1282
Val Trp Ser Lys Val Gly Thr Tyr Pro Trp Trp Pro Cys Met Val Ser	
274 279 284 289	
agt gat ccc cag ctt gag gtt cat act aaa att aac aca aga ggt gcc	1330
Ser Asp Pro Gln Leu Glu Val His Thr Lys Ile Asn Thr Arg Gly Ala	
290 295 300 305	
cga gaa tat cat gtc cag ttt ttt agc aac cag cca gag agg gcg tgg	1378
Arg Glu Tyr His Val Gln Phe Phe Ser Asn Gln Pro Glu Arg Ala Trp	
306 311 316 321	
gtt cat gaa aaa cgg gta cga gag tat aaa ggt cat aaa cag tat gaa	1426
Val His Glu Lys Arg Val Arg Glu Tyr Lys Gly His Lys Gln Tyr Glu	
322 327 332 337	
gaa tta ctg gct gag gca acc aaa caa gcc agc aat cac tct gag aaa	1474
Glu Leu Leu Ala Glu Ala Thr Lys Gln Ala Ser Asn His Ser Glu Lys	

338	343	348	353	
caa aag att cgg aaa ccc cga cct cag aga gaa cgt gct cag tgg gat				1522
Gln Lys Ile Arg Lys Pro Arg Pro Gln Arg Glu Arg Ala Gln Trp Asp				
354	359	364	369	
att ggc att gcc cat gca gag aaa gca ttg aaa atg act cga gaa gaa				1570
Ile Gly Ile Ala His Ala Glu Lys Ala Leu Lys Met Thr Arg Glu Glu				
370	375	380	385	
aga ata gaa cag tat act ttt att tac att gat aaa cag cct gaa gag				1618
Arg Ile Glu Gln Tyr Thr Phe Ile Tyr Ile Asp Lys Gln Pro Glu Glu				
386	391	396	401	
gct tta tcc caa gca aaa aag agt gtt gcc tcc aaa acc gaa gtt aaa				1666
Ala Leu Ser Gln Ala Lys Lys Ser Val Ala Ser Lys Thr Glu Val Lys				
402	407	412	417	
aaa acc cga cga cca aga tct gtg ctg aat act cag cca gaa cag acc				1714
Lys Thr Arg Arg Pro Arg Ser Val Leu Asn Thr Gln Pro Glu Gln Thr				
418	423	428	433	
aat gca ggg gag gtg gcc tcc tca ctc tca agt act gaa att cgg aga				1762
Asn Ala Gly Glu Val Ala Ser Ser Leu Ser Ser Thr Glu Ile Arg Arg				
434	439	444	449	
cat agc cag agg cgg cac aca agt gcg gaa gag gaa gag cca ccg cct				1810
His Ser Gln Arg Arg His Thr Ser Ala Glu Glu Glu Glu Pro Pro Pro				
450	455	460	465	
gtt aaa ata gcc tgg aaa act gcg gca gca agg aaa tcc tta cca gct				1858
Val Lys Ile Ala Trp Lys Thr Ala Ala Ala Arg Lys Ser Leu Pro Ala				
466	471	476	481	
tcc att acg atg cac aaa ggg agc ctg gat ttg cag aag tgt aac atg				1906
Ser Ile Thr Met His Lys Gly Ser Leu Asp Leu Gln Lys Cys Asn Met				
482	487	492	497	
tct cca gtt gtg aaa att gaa caa gtg ttt gct ctt cag aat gct aca				1954
Ser Pro Val Val Lys Ile Glu Gln Val Phe Ala Leu Gln Asn Ala Thr				
498	503	508	513	
ggg gat ggg aaa ttt atc gat caa ttt gtt tat tca aca aag gga att				2002
Gly Asp Gly Lys Phe Ile Asp Gln Phe Val Tyr Ser Thr Lys Gly Ile				
514	519	524	529	
ggg aac aaa aca gaa ata agt gtc agg ggg caa gac agg ctt ata att				2050
Gly Asn Lys Thr Glu Ile Ser Val Arg Gly Gln Asp Arg Leu Ile Ile				
530	535	540	545	
tct aca cca aac cag aga aat gaa aag cca acg cag agt gta tca tct				2098
Ser Thr Pro Asn Gln Arg Asn Glu Lys Pro Thr Gln Ser Val Ser Ser				
546	551	556	561	
cct gaa gca aca tct ggt tct aca ggc tca gta gaa aag aag caa cag				2146
Pro Glu Ala Thr Ser Gly Ser Thr Gly Ser Val Glu Lys Lys Gln Gln				
562	567	572	577	

aga aga tca att aga act cgt tct gaa tca gag aaa tcc act gag gtt	2194
Arg Arg Ser Ile Arg Thr Arg Ser Glu Ser Glu Lys Ser Thr Glu Val	
578 583 588 593	
gtg cca aag aag aag atc aaa aag gag cag gtt gaa aca gtt cct cag	2242
Val Pro Lys Lys Lys Ile Lys Lys Glu Gln Val Glu Thr Val Pro Gln	
594 599 604 609	
gct aca gtg aag act gga tta cag aaa ggg tcc gcg gac cgg gga gtg	2290
Ala Thr Val Lys Thr Gly Leu Gln Lys Gly Ser Ala Asp Arg Gly Val	
610 615 620 625	
cag ggc tct gtc aga ttc agt gac agc tcc gtc tcc gca gcg att gag	2338
Gln Gly Ser Val Arg Phe Ser Asp Ser Ser Val Ser Ala Ala Ile Glu	
626 631 636 641	
gaa act gtg gac tga gattcctgta caatttcac ccagaaaactc cagacttgta	2393
Glu Thr Val Asp *	
642	
gtctccatgc aagattttctt tgtcggcggc ttgataaaca gtttctttgt tttcgatttt	2453
gatttcgcca atcatcatta ttggcatttt cctgcctggt ttcttcttca agactctgaa	2513
caattgcttt aacagtcaaa tgattttttt ttttcggttt gagctggatg ggtacagctt	2573
aaatcatggg tccagcctaa aaaccacat ttaacttaca ctgatcaatt tcaacatgga	2633
ctgttttttg ttttttggtt ttaaataaag catcattaat gcacatctgc agggggttgc	2693
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 <222> (249)..(1940)

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ataaaacctc ccaggacata aaggtagca cagaccctgt ttggatcaag tcagttcctg	240
gagcctga atg atg act gct gaa tca cgg gaa gcc acg ggt ctg tcc cca	290
Met Met Thr Ala Glu Ser Arg Glu Ala Thr Gly Leu Ser Pro	
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cag gct gca cag gag aag gat ggt atc gta ata gtg aag gtg gaa gag	338
Gln Ala Ala Gln Glu Lys Asp Gly Ile Val Ile Val Lys Val Glu Glu	
15 20 25 30	
gaa gat gag gaa gac cac atg tgg ggg cag gat tcc acc cta cag gac	386
Glu Asp Glu Glu Asp His Met Trp Gly Gln Asp Ser Thr Leu Gln Asp	
31 36 41 46	
acg cct cct cca gac cca gag ata ttc cgc caa cgc ttc agg cgc ttc	434
Thr Pro Pro Pro Asp Pro Glu Ile Phe Arg Gln Arg Phe Arg Arg Phe	
47 52 57 62	
tgt tac cag aac act ttt ggg ccc cga gag gct ctc agt cgg ctg aag	482
Cys Tyr Gln Asn Thr Phe Gly Pro Arg Glu Ala Leu Ser Arg Leu Lys	
63 68 73 78	
gaa ctt tgt cat cag tgg ctg cgg cca gaa ata aac acc aag gaa cag	530
Glu Leu Cys His Gln Trp Leu Arg Pro Glu Ile Asn Thr Lys Glu Gln	
79 84 89 94	
atc ctg gag ctt ctg gtg cta gag cag ttt ctt tcc atc ctg ccc aag	578
Ile Leu Glu Leu Leu Val Leu Glu Gln Phe Leu Ser Ile Leu Pro Lys	
95 100 105 110	
gag ctc cag gtc tgg ctg cag gaa tac cgc ccc gat agt gga gag gag	626
Glu Leu Gln Val Trp Leu Gln Glu Tyr Arg Pro Asp Ser Gly Glu Glu	
111 116 121 126	
gcc gtg acc ctt cta gaa gac ttg gag ctt gat tta tca gga caa cag	674
Ala Val Thr Leu Leu Glu Asp Leu Glu Leu Asp Leu Ser Gly Gln Gln	
127 132 137 142	
gtc cca ggt caa gtt cat gga cct gag atg ctc gca agg ggg atg gtg	722
Val Pro Gly Gln Val His Gly Pro Glu Met Leu Ala Arg Gly Met Val	
143 148 153 158	
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Ala Thr Gln Ser His Phe Lys His Ser Ser Arg Lys Pro Arg Leu Leu	
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Gln Ser Arg Ala Leu Pro Ala Ala His Ile Pro Ala Pro Pro His Glu	
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Gln Gly Ser Gln Pro Gly Ser Pro Pro Ala Thr Leu Ser Leu Gln His
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ctc ctg tct acc aag ccc cgt gcc agt cct gcc cag aac ccc cag gag   151
Leu Leu Ser Thr Lys Pro Arg Ala Ser Pro Ala Gln Asn Pro Gln Glu
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ccc atg agc cct ctg act ctc cac acc ata ccc cag tcc atc ctc ctc   199
Pro Met Ser Pro Leu Thr Leu His Thr Ile Pro Gln Ser Ile Leu Leu
  36              41              46              51

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Gln Ser Thr Arg Pro Pro Val Leu Pro Gln Pro Arg Ala Val Arg Pro
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Arg Glu Ala Leu Cys His Lys Ser *
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 Ala Ile Leu Val Lys Ser Thr Glu Asp Gly Arg Gln Tyr Val Ile Lys  
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 98 103 108 113  
 ttg gcc ctg aaa cat gta cat gat aga aaa att ctt cat cga gac att 920  
 Leu Ala Leu Lys His Val His Asp Arg Lys Ile Leu His Arg Asp Ile  
 114 119 124 129  
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482	487	492	497	
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Ala	Lys	Arg	Pro	Ala	Ser	Gly	Gln	Asn	Ser	Ile	Ser	Val	Met	Pro	Ala	
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Phe	Ile	Glu	Lys	Glu	Lys	Lys	Gln	Lys	Asp	Gln	Ile	Ile	Ser	Leu	Met	
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Lys Arg Glu Ile Tyr Gly Arg Gly Leu Pro Glu Arg Gln Lys Gly Gln				
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cta gct gta gaa aga gct aaa caa gta gaa gag ttc ctg cag cga aaa				2024
Leu Ala Val Glu Arg Ala Lys Gln Val Glu Glu Phe Leu Gln Arg Lys				
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Arg Glu Ala Met Gln Asn Lys Ala Arg Ala Glu Gly His Met Val Tyr				
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Leu Ala Arg Leu Arg Gln Ile Arg Leu Gln Asn Phe Asn Glu Arg Gln				
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Gln Ile Lys Ala Lys Leu Arg Gly Glu Lys Lys Glu Ala Asn His Ser				
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Glu Ser Leu Lys Ala His Ala Asn Ala Arg Ala Ala Val Leu Lys Glu				
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642	647	652	657	
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Thr Asn Asn Ala Ile Ser Ser Lys Arg Glu Ile Leu Arg Arg Leu Asn				
658	663	668	673	

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65 70 75 80

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Ala Ile Tyr Gly Trp Asn Phe Asn Arg Asp Ser Leu Tyr Pro Tyr Leu
81 86 91 96

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gag gac atc cca gac cct gaa gta aac tgg atc ccc tgt aat aat cgt 336
Glu Asp Ile Pro Asp Pro Glu Val Asn Trp Ile Pro Cys Asn Asn Arg
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113 118 123 128

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Gly Pro Val Gly Glu Ser Gly Ala Lys Gly Gly Met Ala Leu Gly Glu				
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ata cct aat gta gat gat ggg ttg atc tta gag aaa agc ttt cag ttt				576
Ile Pro Asn Val Asp Asp Gly Leu Ile Leu Glu Lys Ser Phe Gln Phe				
177	182	187	192	
tcc ctc att cag tat gat acc agc cat ggg tct gtc ata aat ggc tat				624
Ser Leu Ile Gln Tyr Asp Thr Ser His Gly Ser Val Ile Asn Gly Tyr				
193	198	203	208	
tat tgt gtt gag acc cca gta caa gaa aga ctc agc tgc ctg gcc aag				672
Tyr Cys Val Glu Thr Pro Val Gln Glu Arg Leu Ser Cys Leu Ala Lys				
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aac aac tct atc tat gtt gtg gca aat att ggg gac aag aag cca tgc				720
Asn Asn Ser Ile Tyr Val Val Ala Asn Ile Gly Asp Lys Lys Pro Cys				
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gat acc agt gat cct cag tgt ccc cct gat ggc cgt tac caa tac aac				768
Asp Thr Ser Asp Pro Gln Cys Pro Pro Asp Gly Arg Tyr Gln Tyr Asn				
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act gat gtg gta ttt gat tct caa gga aaa ctg gtg gca cgc tac cat				816
Thr Asp Val Val Phe Asp Ser Gln Gly Lys Leu Val Ala Arg Tyr His				
257	262	267	272	
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Lys Gln Asn Leu Phe Met Gly Glu Asn Gln Phe Asn Val Pro Lys Glu				
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Pro Glu Ile Val Thr Phe Asn Thr Thr Phe Gly Ser Phe Gly Ile Phe				
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Thr Cys Phe Asp Ile Leu Phe His Asp Pro Ala Val Thr Leu Val Lys				
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Asp Phe His Val Asp Thr Ile Val Phe Pro Thr Ala Trp Met Asn Val				
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Leu Pro His Leu Ser Ala Val Glu Phe His Ser Ala Trp Ala Met Gly				
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Tyr Thr Val Cys Gln Lys Asp Leu Cys Cys His Leu Ser Tyr Lys Met	
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 97 102 107 112

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Gln Tyr Leu Ala His Val Ala Ser Ser His Lys Gly Arg Lys Asp His	
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Ile	Val	Gly	Leu	Asp	Gln	Val	Thr	Gly	Met	Thr	Glu	Thr	Ala	Phe	Gly		
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Ser	Ala	Tyr	Lys	Thr	Lys	Lys	Gly	Met	Phe	Arg	Thr	Val	Gly	Gln	Leu		
641					646					651					656		
tac	aaa	gaa	tct	ctc	acc	aag	ctg	atg	gca	act	ctc	cga	aac	acc	aac	2016	
Tyr	Lys	Glu	Ser	Leu	Thr	Lys	Leu	Met	Ala	Thr	Leu	Arg	Asn	Thr	Asn		
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cct	aac	ttt	gtt	cgt	tgt	atc	att	cca	aat	cac	gag	aag	agg	gct	gga	2064	
Pro	Asn	Phe	Val	Arg	Cys	Ile	Ile	Pro	Asn	His	Glu	Lys	Arg	Ala	Gly		
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Lys	Leu	Asp	Pro	His	Leu	Val	Leu	Asp	Gln	Leu	Arg	Cys	Asn	Gly	Val		
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Phe	Gln	Glu	Phe	Arg	Gln	Arg	Tyr	Glu	Ile	Leu	Thr	Pro	Asn	Ala	Ile		
721					726					731					736		
cct	aaa	ggg	ttt	atg	gat	ggg	aaa	cag	gcc	tgt	gaa	cga	atg	atc	cgg	2256	
Pro	Lys	Gly	Phe	Met	Asp	Gly	Lys	Gln	Ala	Cys	Glu	Arg	Met	Ile	Arg		
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Phe	Phe	Arg	Ala	Gly	Val	Leu	Ala	His	Leu	Glu	Glu	Glu	Arg	Asp	Leu		
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Lys	Ile	Thr	Asp	Ile	Ile	Ile	Phe	Phe	Gln	Ala	Val	Cys	Arg	Gly	Tyr		
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Gln	Trp	Trp	Arg	Val	Phe	Thr	Lys	Val	Lys	Pro	Leu	Leu	Gln	Val	Thr		
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Arg	Gln	Glu	Glu	Glu	Leu	Gln	Ala	Lys	Asp	Glu	Glu	Leu	Leu	Lys	Val		

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Glu Leu Gln Ala Gln Ile Asp Glu Leu Lys Leu Gln Leu Ala Lys Lys				
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Ala Glu Leu Gln Glu Asp Phe Glu Ser Glu Lys Ala Ser Arg Asn Lys	
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Asp Arg Ala Val Ile Tyr Asn Pro Ala Thr Gln Ala Asp Trp Thr Ala	
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Lys Lys Leu Val Trp Ile Pro Ser Glu Arg His Gly Phe Glu Ala Ala	
33 38 43 48	
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Ser Ile Lys Glu Glu Arg Gly Asp Glu Val Met Val Glu Leu Ala Glu	
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Pro Pro Lys Phe Ser Lys Val Glu Asp Met Ala Glu Leu Thr Cys Leu				
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Asn Glu Ala Ser Val Leu His Asn Leu Lys Asp Arg Tyr Tyr Ser Gly				
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Leu Ile Tyr Thr Tyr Ser Gly Leu Phe Cys Val Val Ile Asn Pro Tyr				
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Thr Gly Glu Ser Gly Ala Gly Lys Thr Glu Asn Thr Lys Lys Val Ile				
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Gln Tyr Leu Ala His Val Ala Ser Ser His Lys Gly Arg Lys Asp His				
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Arg Phe Gly Lys Phe Ile Arg Ile Asn Phe Asp Val Thr Gly Tyr Ile				
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Val Gly Ala Asn Ile Glu Thr Tyr Leu Leu Glu Lys Ser Arg Ala Val				
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Phe Arg Trp Leu Val His Arg Ile Asn Lys Ala Leu Asp Arg Thr Lys	
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Ile Phe Glu Leu Asn Ser Phe Glu Gln Leu Cys Ile Asn Tyr Thr Asn	
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Glu Lys Leu Gln Gln Leu Phe Asn His Thr Met Phe Ile Leu Glu Gln	
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Ile Ile His Tyr Ala Gly Lys Val Asp Tyr Lys Ala Asp Glu Trp Leu	
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Pro Ser Val Pro Pro Ser Tyr Pro Gly Pro Ser Tyr Gln Gly Tyr His	
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Thr Met Pro Pro Gln Pro Gly Met Pro Ala Ala Pro Tyr Pro Met Gln	
76                              81                              86                              91	
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Tyr Pro Pro Pro Tyr Pro Ala Gln Pro Met Gly Pro Pro Ala Tyr His	
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Glu Thr Leu Ala Gly Gly Ala Ala Ala Pro Tyr Pro Ala Ser Gln Pro	
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 Ser Ser Lys Thr Arg Ser Ser Asp Val His Ser Ser Gly Ser Ser Asp  
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 Ala His Met Asp Ala Ser Gly Pro Ser Asp Ser Asp Met Pro Ser Arg  
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 Leu Glu Asn Lys Leu Lys Ala Phe Ser Ile Gly Lys Met Ser Thr Ala  
 77 82 87 92  
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 Lys Arg Thr Leu Ser Lys Lys Glu Gln Glu Glu Leu Lys Lys Lys Glu

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gaa gga agt gat ggt aat aaa gtg aaa aca ttt gtg cga ggg ggt gtt				492
Glu Gly Ser Asp Gly Asn Lys Val Lys Thr Phe Val Arg Gly Gly Val				
125	130	135	140	
gtt aat gca gct aaa gaa gaa cat gaa aca gat gaa aaa aga ggt aaa				540
Val Asn Ala Ala Lys Glu Glu His Glu Thr Asp Glu Lys Arg Gly Lys				
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Ile Tyr Lys Pro Ser Ser Arg Phe Ala Asp Gln Lys Asn Pro Pro Asn				
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Gln Ser Ser Asn Glu Arg Pro Pro Ser Leu Leu Val Ile Glu Thr Lys				
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Lys Pro Pro Leu Lys Lys Gly Glu Lys Glu Lys Lys Lys Ser Asn Leu				
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Glu Leu Phe Lys Glu Glu Leu Lys Gln Ile Gln Glu Glu Arg Asp Glu				
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317	322	327	332	

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Ala Leu Ile His Arg Met Ile Glu Phe Val Val Arg Glu Gly Pro Met	
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Phe Glu Ala Met Ile Met Asn Arg Glu Ile Asn Asn Pro Met Phe Arg	
445 450 455 460	
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Phe Leu Phe Glu Asn Gln Thr Pro Ala His Val Tyr Tyr Arg Trp Lys	
461 466 471 476	
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Leu Tyr Ser Ile Leu Gln Gly Asp Ser Pro Thr Lys Trp Arg Thr Glu	
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Asp Phe Arg Met Phe Lys Asn Gly Ser Phe Trp Arg Pro Pro Pro Leu	
493 498 503 508	
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Asn Pro Tyr Leu His Gly Met Ser Glu Glu Gln Glu Thr Glu Ala Phe	
509 514 519 524	
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Val Glu Glu Pro Ser Lys Lys Gly Ala Leu Lys Glu Glu Gln Arg Asp	
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Ile Val Asp Cys Ile Thr Glu Ser Leu Ser Ile Leu Lys Thr Pro Leu	
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Pro Lys Lys Ile Ala Arg Leu Tyr Leu Val Ser Asp Val Leu Tyr Asn	
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Ser Ser Ala Lys Val Ala Asn Ala Ser Tyr Tyr Arg Lys Phe Phe Glu	
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Cys Phe Arg Ala Trp Glu Asp Trp Ala Ile Tyr Pro Glu Pro Phe Leu	
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Ile Lys Leu Gln Asn Ile Phe Leu Gly Leu Val Asn Ile Ile Glu Glu	
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Lys Glu Thr Glu Asp Val Pro Asp Asp Leu Asp Gly Ala Pro Ile Glu	
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Asp Ala Thr Pro Ile Asp Asp Leu Asp Gly Val Pro Ile Lys Ser Leu	
717 722 727 732	
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989 994 999 1004	
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Lys Ser Gly Lys Lys Ser Arg Ser Gln Ser Arg Ser Pro His Arg Ser	



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Asp Ala Thr Pro Ile Asp Asp Leu Asp Gly Val Pro Ile Lys Ser Leu				
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 cc atg gca cct gtg cac ggc gac gac tgt gag ata ggg gcg agt gct 167  
 Met Ala Pro Val His Gly Asp Asp Cys Glu Ile Gly Ala Ser Ala  
 1 5 10  
 ctg tca gat tca ggg agt ttt gta tct tct cga gcc cgg cga gaa aaa 215  
 Leu Ser Asp Ser Gly Ser Phe Val Ser Ser Arg Ala Arg Arg Glu Lys  
 16 21 26 31  
 aaa tca aag aag ggg cgc caa gaa gcc cta gaa aga ctg aaa aag gct 263  
 Lys Ser Lys Lys Gly Arg Gln Glu Ala Leu Glu Arg Leu Lys Lys Ala  
 32 37 42 47

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Lys Ala Gly Glu Arg Tyr Lys Tyr Glu Val Glu Asp Phe Thr Gly Val	
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Tyr Glu Glu Val Asp Glu Glu Gln Tyr Ser Lys Leu Val Gln Ala Arg	
64 69 74 79	
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Gln Asp Asp Asp Trp Ile Val Asp Asp Asp Gly Ile Gly Tyr Val Glu	
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Asp Gly Arg Glu Ile Phe Asp Asp Asp Leu Glu Asp Asp Ala Leu Asp	
96 101 106 111	
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Ala Asp Glu Lys Gly Lys Asp Gly Lys Ala Arg Asn Lys Asp Lys Arg	
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Asn Val Lys Lys Leu Ala Val Thr Lys Pro Asn Asn Ile Lys Ser Met	
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Phe Ile Ala Cys Ala Gly Lys Lys Thr Ala Asp Lys Ala Val Asp Leu	
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Ser Lys Asp Gly Leu Leu Gly Asp Ile Leu Gln Asp Leu Asn Thr Glu	
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Thr Pro Gln Ile Thr Pro Pro Pro Val Met Ile Leu Lys Lys Lys Arg	
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Val Pro Ser Gly Lys Ile Ala Ser Pro Val Ser Arg Lys Glu Pro Pro	
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Asp	Ser	Ser	Phe	Ser	Val	Gln	Glu	Val	Gln	Val	Asp	Ser	Ser	His	Leu		
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1175																	
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Pro	Leu	Val	Lys	Gly	Ala	Asp	Glu	Glu	Gln	Val	Phe	His	Phe	Tyr	Trp		
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Leu	Asp	Ala	Tyr	Glu	Asp	Gln	Tyr	Asn	Gln	Pro	Gly	Val	Val	Phe	Leu		
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Phe	Gly	Lys	Val	Trp	Ile	Glu	Ser	Ala	Glu	Thr	His	Val	Ser	Cys	Cys		
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gtc	atg	gtg	aaa	aat	atc	gag	cga	acg	ctt	tac	ttc	ctt	ccc	cgt	gaa		
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Ala Leu Asn Gln Pro	Val Ser Trp Cys Lys	Val Glu Ala Met Ala Leu		
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aaa cca gac ctg gtg	aat gta att aag gat	gtc agt cca cca ccg ctt		1751
Lys Pro Asp Leu Val	Asn Val Ile Lys Asp	Val Ser Pro Pro Pro Leu		
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gtc gtg atg gct ttc	agc atg aag aca atg	cag aat gca aag aac cat		1799
Val Val Met Ala Phe	Ser Met Lys Thr Met	Gln Asn Ala Lys Asn His		
544	549	554	559	
caa aat gag att att	gct atg gca gct ttg	gtc cat cac agt ttt gca		1847
Gln Asn Glu Ile Ile	Ala Met Ala Ala Leu	Val His His Ser Phe Ala		
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Leu Asp Lys Ala Ala	Pro Lys Pro Pro Phe	Gln Ser His Phe Cys Val		
576	581	586	591	
gtg tct aaa cca aag	gac tgt att ttt cca	tat gct ttc aaa gaa gtc		1943
Val Ser Lys Pro Lys	Asp Cys Ile Phe Pro	Tyr Ala Phe Lys Glu Val		
592	597	602	607	
att gag aaa aag aat	gtg aag gtt gag gtt	gct gca aca gaa aga aca		1991
Ile Glu Lys Lys Asn	Val Lys Val Glu Val	Ala Ala Thr Glu Arg Thr		
608	613	618	623	
ctg cta ggt ttt ttc	ctt gca aaa gtt cac	aaa att gat cct gat atc		2039
Leu Leu Gly Phe Phe	Leu Ala Lys Val His	Lys Ile Asp Pro Asp Ile		
624	629	634	639	
att gtg ggt cat aat	att tat ggg ttt gaa	ctg gaa gta cta ctg cag		2087
Ile Val Gly His Asn	Ile Tyr Gly Phe Glu	Leu Glu Val Leu Leu Gln		
640	645	650	655	
aga att aat gtg tgc	aaa gct cct cac tgg	tcc aag ata ggt cga ctg		2135
Arg Ile Asn Val Cys	Lys Ala Pro His Trp	Ser Lys Ile Gly Arg Leu		
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aag cga tcc aac atg	cca aag ctt ggg ggc	cgg agt gga ttt ggt gaa		2183
Lys Arg Ser Asn Met	Pro Lys Leu Gly Gly	Arg Ser Gly Phe Gly Glu		
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Arg Asn Ala Thr Cys	Gly Arg Met Ile Cys	Asp Val Glu Ile Ser Ala		
688	693	698	703	
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Lys Glu Leu Ile Arg	Cys Lys Ser Tyr His	Leu Ser Glu Leu Val Gln		
704	709	714	719	
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Gln Ile Leu Lys Thr	Glu Arg Val Val Ile	Pro Met Glu Asn Ile Gln		
720	725	730	735	

aat atg tac agt gaa tct tct caa ctg tta tac ctg ttg gaa cac acc	2375
Asn Met Tyr Ser Glu Ser Ser Gln Leu Leu Tyr Leu Leu Glu His Thr	
736 741 746 751	
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Trp Lys Asp Ala Lys Phe Ile Leu Gln Ile Met Cys Glu Leu Asn Val	
752 757 762 767	
ctt cca tta gca ttg cag atc act aac atc gct ggg aac att atg tcc	2471
Leu Pro Leu Ala Leu Gln Ile Thr Asn Ile Ala Gly Asn Ile Met Ser	
768 773 778 783	
agg acg ctg atg ggt gga cga tcc gag cgt aac gag ttc ttg ttg ctt	2519
Arg Thr Leu Met Gly Gly Arg Ser Glu Arg Asn Glu Phe Leu Leu Leu	
784 789 794 799	
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His Ala Phe Tyr Glu Asn Asn Tyr Ile Val Pro Asp Lys Gln Ile Phe	
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Arg Lys Pro Gln Gln Lys Leu Gly Asp Glu Asp Glu Glu Ile Asp Gly	
816 821 826 831	
gat acc aat aaa tac aag aaa gga cgt aag aaa gga gct tat gct gga	2663
Asp Thr Asn Lys Tyr Lys Lys Gly Arg Lys Lys Gly Ala Tyr Ala Gly	
832 837 842 847	
ggc ttg gtt ttg gac ccc aaa gtt ggt ttt tat gat aag ttc att ttg	2711
Gly Leu Val Leu Asp Pro Lys Val Gly Phe Tyr Asp Lys Phe Ile Leu	
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Leu Leu Asp Phe Asn Ser Leu Tyr Pro Ser Ile Ile Gln Glu Phe Asn	
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Ile Cys Phe Thr Thr Val Gln Arg Val Ala Ser Glu Ala Gln Lys Val	
880 885 890 895	
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Thr Glu Asp Gly Glu Gln Glu Gln Ile Pro Glu Leu Pro Asp Pro Ser	
896 901 906 911	
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Leu Glu Met Gly Ile Leu Pro Arg Glu Ile Arg Lys Leu Val Glu Arg	
912 917 922 927	
aga aaa caa gtc aaa cag cta atg aaa cag caa gac tta aat cca gac	2951
Arg Lys Gln Val Lys Gln Leu Met Lys Gln Gln Asp Leu Asn Pro Asp	
928 933 938 943	
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Leu Ile Leu Gln Tyr Asp Ile Arg Gln Lys Ala Leu Lys Leu Thr Ala	
944 949 954 959	

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Asn Ser Met Tyr Gly Cys Leu Gly Phe Ser Tyr Ser Arg Phe Tyr Ala	
960 965 970 975	
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Lys Pro Leu Ala Ala Leu Val Thr Tyr Lys Gly Arg Glu Ile Leu Met	
976 981 986 991	
cat acg aaa gag atg gta caa aag atg aat ctt gaa gtt att tat gga	3143
His Thr Lys Glu Met Val Gln Lys Met Asn Leu Glu Val Ile Tyr Gly	
992 997 1002 1007	
gat aca gat tca att atg ata aac acc aat agc acc aat ctg gaa gaa	3191
Asp Thr Asp Ser Ile Met Ile Asn Thr Asn Ser Thr Asn Leu Glu Glu	
1008 1013 1018 1023	
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Val Phe Lys Leu Gly Asn Lys Val Lys Ser Glu Val Asn Lys Leu Tyr	
1024 1029 1034 1039	
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Lys Leu Leu Glu Ile Asp Ile Asp Gly Val Phe Lys Ser Leu Leu Leu	
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Leu Lys Lys Lys Lys Tyr Ala Ala Leu Val Val Glu Pro Thr Ser Asp	
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Gly Asn Tyr Val Thr Lys Gln Glu Leu Lys Gly Leu Asp Ile Val Arg	
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Arg Asp Trp Cys Asp Leu Ala Lys Asp Thr Gly Asn Phe Val Ile Gly	
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Lys Arg Leu Ile Glu Ile Gly Glu Asn Val Leu Asn Gly Ser Val Pro	
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 1376  
 1392

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Lys Lys Gln Phe Phe Thr Pro Lys Val Leu Gln Asp Tyr Arg Lys Leu				
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Lys Asn Thr Ala Glu Gln Phe Leu Ser Arg Ser Gly Tyr Ser Glu Val				
1440	1445	1450	1455	
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Asn Leu Ser Lys Leu Phe Ala Gly Cys Ala Val Lys Ser *				
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Pro Thr Thr Thr Ala Cys Thr Gly Pro Trp Gln Arg Ala Pro Pro Leu	
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Arg Leu Leu Val Gln Lys Arg Glu Ala Asp Ser Ser Gly Leu Ala Phe	
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Ala Ser Asn Ser Leu Gln Arg Arg Lys Lys Gly Leu Leu Leu Arg Pro	
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Val Ala Pro Leu Arg Thr Arg Pro Pro Leu Leu Ile Ser Leu Pro Gln	
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Asp Phe Arg Gln Val Ser Ser Val Ile Asp Val Asp Leu Leu Pro Glu	
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Thr His Arg Arg Val Arg Leu His Lys His Gly Ser Asp Arg Pro Leu	
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Gly Phe Tyr Ile Arg Asp Gly Met Ser Val Arg Val Ala Pro Gln Gly	
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Val Asn Gly Ile Glu Val Ala Gly Lys Thr Leu Asp Gln Val Thr Asp	
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Met Met Val Ala Asn Ser His Asn Leu Ile Val Thr Val Lys Pro Ala	
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Pro Pro Ser Ala Gly Pro Gly Pro Ala Glu Pro Asp Ser Asp Asp Asp	
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Ala Glu Ile Phe Lys Val Leu Ala Ser Phe Tyr Val Ile Leu Val Ile	
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Leu Tyr Gly Leu Thr Ser Ser Tyr Ser Leu Trp Trp Met Leu Arg Ser	
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Ala Asp Gln Tyr Asp Pro Leu Tyr Ser Lys Arg Phe Ser Ile Phe Leu	
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Ser Glu Val Ser Glu Asn Lys Leu Lys Gln Ile Asn Leu Asn Asn Glu	
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Trp Thr Val Glu Lys Leu Lys Ser Lys Leu Val Lys Asn Ala Gln Asp	
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Arg Val Tyr His Ser Ser Leu Val Val Asp His Pro Ala Leu Ala Phe	
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Gly Phe Gln Asp Leu Lys Asn Leu Arg Thr Leu Tyr Leu Lys Ser Ser	
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Pro Val Phe Ser Gln Lys Met Thr Val Trp Ile Leu Leu Leu Leu Ser
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Leu Tyr Pro Gly Phe Thr Ser Gln Lys Ser Asp Asp Asp Tyr Glu Asp
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Tyr Ala Ser Asn Lys Thr Trp Val Leu Thr Pro Lys Val Pro Glu Gly
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Asp Val Thr Val Ile Leu Asn Asn Leu Leu Glu Gly Tyr Asp Asn Lys
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ctt cgg cct gat ata gga gtg aag cca acg tta att cac aca gac atg      766
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Tyr Val Asn Ser Ile Gly Pro Val Asn Ala Ile Asn Met Glu Tyr Thr
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ctc tac ctg tga gga	ggtatgggtt ttactgatat ggttcttatt cactgagtct	1925
Leu Tyr Leu *		
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Met Gly Ser Ser Gln Ser Val Glu Ile Pro Gly Gly Gly	
1 5 10	
acc gag ggc tac cac gtt ctg cgg gta caa gaa aat tcc cca gga cac	158
Thr Glu Gly Tyr His Val Leu Arg Val Gln Glu Asn Ser Pro Gly His	
14 19 24 29	

aga gct ggt ttg gag cct ttc ttt gat ttt att gtt tct att aat ggt	206
Arg Ala Gly Leu Glu Pro Phe Phe Asp Phe Ile Val Ser Ile Asn Gly	
30 35 40 45	
tca aga tta aat aaa gac aat gac act ctt aag gat ctg ctg aaa gca	254
Ser Arg Leu Asn Lys Asp Asn Asp Thr Leu Lys Asp Leu Leu Lys Ala	
46 51 56 61	
aac gtt gaa aag cct gta aag atg ctt atc tat agc agc aaa aca ttg	302
Asn Val Glu Lys Pro Val Lys Met Leu Ile Tyr Ser Ser Lys Thr Leu	
62 67 72 77	
gaa ctg cga gag acc tca gtc aca cca agt aac ctg tgg ggc ggc cag	350
Glu Leu Arg Glu Thr Ser Val Thr Pro Ser Asn Leu Trp Gly Gly Gln	
78 83 88 93	
ggc tta ttg gga gtg agc att cgt ttc tgc agc ttt gat ggg gca aat	398
Gly Leu Leu Gly Val Ser Ile Arg Phe Cys Ser Phe Asp Gly Ala Asn	
94 99 104 109	
gaa aat gtt tgg cat gtg ctg gag gtg gaa tca aat tct cct gca gca	446
Glu Asn Val Trp His Val Leu Glu Val Glu Ser Asn Ser Pro Ala Ala	
110 115 120 125	
ctg gca ggt ctt aga cca cac agt gat tat ata att gga gca gat aca	494
Leu Ala Gly Leu Arg Pro His Ser Asp Tyr Ile Ile Gly Ala Asp Thr	
126 131 136 141	
gtc atg aat gag tct gaa gat cta ttc agc ctt atc gaa aca cat gaa	542
Val Met Asn Glu Ser Glu Asp Leu Phe Ser Leu Ile Glu Thr His Glu	
142 147 152 157	
gca aaa cca ttg aaa ctg tat gtg tac aac aca gac act gat aac tgt	590
Ala Lys Pro Leu Lys Leu Tyr Val Tyr Asn Thr Asp Thr Asp Asn Cys	
158 163 168 173	
cga gaa gtg att att aca cca aat tct gca tgg ggt gga gaa ggc agc	638
Arg Glu Val Ile Ile Thr Pro Asn Ser Ala Trp Gly Gly Glu Gly Ser	
174 179 184 189	
cta gga tgt ggc att gga tat ggt tat ttg cat cga ata cct aca cgc	686
Leu Gly Cys Gly Ile Gly Tyr Gly Tyr Leu His Arg Ile Pro Thr Arg	
190 195 200 205	
cca ttt gag gaa gga aag aaa att tct ctt cca gga caa atg gct ggt	734
Pro Phe Glu Glu Gly Lys Lys Ile Ser Leu Pro Gly Gln Met Ala Gly	
206 211 216 221	
aca cct att aca cct ctt aaa gat ggg ttt aca gag gtc cag ctg tcc	782
Thr Pro Ile Thr Pro Leu Lys Asp Gly Phe Thr Glu Val Gln Leu Ser	
222 227 232 237	
tca gtt aat ccc ccg tct ttg tca cca cca gga act aca gga att gaa	830
Ser Val Asn Pro Pro Ser Leu Ser Pro Pro Gly Thr Thr Gly Ile Glu	
238 243 248 253	

cag agt ctg act gga ctt tct att agc tca act cca cca gct gtc agt	878
Gln Ser Leu Thr Gly Leu Ser Ile Ser Ser Thr Pro Pro Ala Val Ser	
254 259 264 269	
agt gtt ctc agt aca ggt gta cca aca gta ccg tta ttg cca cca caa	926
Ser Val Leu Ser Thr Gly Val Pro Thr Val Pro Leu Leu Pro Pro Gln	
270 275 280 285	
gta aac cag tcc ctc act tct gtg cca cca atg aat cca gct act aca	974
Val Asn Gln Ser Leu Thr Ser Val Pro Pro Met Asn Pro Ala Thr Thr	
286 291 296 301	
tta cca ggt ctg atg cct tta cca gca gga ctg ccg aac ctc ccc aac	1022
Leu Pro Gly Leu Met Pro Leu Pro Ala Gly Leu Pro Asn Leu Pro Asn	
302 307 312 317	
ctc aac ctc cgc ctc cca gca cca cac atc atg cca ggg gtt ggc tta	1070
Leu Asn Leu Arg Leu Pro Ala Pro His Ile Met Pro Gly Val Gly Leu	
318 323 328 333	
cca gaa ctt gta aac cca ggt ctg cca cct ctt cct tcc atg cct ccc	1118
Pro Glu Leu Val Asn Pro Gly Leu Pro Pro Leu Pro Ser Met Pro Pro	
334 339 344 349	
cga aac tta cct ggc att gca cct ctc ccc ctg cca tcc gag ttc ctc	1166
Arg Asn Leu Pro Gly Ile Ala Pro Leu Pro Leu Pro Ser Glu Phe Leu	
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ccg tca ttc ccc ttg gtt cca gag agc tct tct gca gca agc tca gga	1214
Pro Ser Phe Pro Leu Val Pro Glu Ser Ser Ser Ala Ala Ser Ser Gly	
366 371 376 381	
gag ctg ctg tct tcc ctc ccg ccc acc agc aac gca ccc tct gac cct	1262
Glu Leu Leu Ser Ser Leu Pro Pro Thr Ser Asn Ala Pro Ser Asp Pro	
382 387 392 397	
gcc aca act act gca aag gca gac gct gcc tcc tca ctc act gtg gat	1310
Ala Thr Thr Thr Ala Lys Ala Asp Ala Ala Ser Ser Leu Thr Val Asp	
398 403 408 413	
gtg acg ccc ccc act gcc aag gcc ccc acc acc gtt gag gac aga gtc	1358
Val Thr Pro Pro Thr Ala Lys Ala Pro Thr Thr Val Glu Asp Arg Val	
414 419 424 429	
ggc gac tcc acc cca gtc agc gag aag cct gtt tct gcg gct gtg gat	1406
Gly Asp Ser Thr Pro Val Ser Glu Lys Pro Val Ser Ala Ala Val Asp	
430 435 440 445	
gcc aat gct tct gag tca cct taa ctttgaacca ttctttggaa ttggcgtggt	1460
Ala Asn Ala Ser Glu Ser Pro *	
446 451	
atatttaacc acgggagcgt gtctggaaac gcaaaactatc attaatattca tactagtttg	1520
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agagattttt acttttggtc tccgtgagtc gcatctctac taaggtttac acaggaattc 1940  
cacctgaaga cttgtgttaa agttctacag cgcgactgt taactgaacg tctttttctt 2000  
cagcctatac gcggatcctt gttttgagct ctgagaatca ctgagacaac attttgtaac 2060  
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gtgcgctggc gcgcggacgg ccttccctg gagaagctgc ctgtgcac atg ggc ctg 177  
Met Gly Leu  
1  
gtg atc acc gag gtg gag cag gaa ccc agc ttc tcg gac atc gag agc 225  
Val Ile Thr Glu Val Glu Gln Glu Pro Ser Phe Ser Asp Ile Glu Ser  
4 9 14 19  
ctc gtg gtg tgg tgt atg gcc gtg ggc atc tcc tac att agc gtc tac 273  
Leu Val Val Trp Cys Met Ala Val Gly Ile Ser Tyr Ile Ser Val Tyr  
20 25 30 35  
gac cac qaa ggt att ttc aaa aga aat aat tcc aga ttg atg gat gga 321  
Asp His Gln Gly Ile Phe Lys Arg Asn Asn Ser Arg Leu Met Asp Gly  
36 41 46 51  
att tta aaa caa cag caa gaa ctt ctg ggc cta gat tgt tca aaa tgc 369  
Ile Leu Lys Gln Gln Gln Glu Leu Leu Gly Leu Asp Cys Ser Lys Cys  
52 57 62 67

tca cca gag ttt gca aat agt aat gac aaa gat gat caa gtt tta aat	417
Ser Pro Glu Phe Ala Asn Ser Asn Asp Lys Asp Asp Gln Val Leu Asn	
68 73 78 83	
tgc cat ttg gca gtg aag gtg cta tcc ccg gaa gat gga aaa gca gat	465
Cys His Leu Ala Val Lys Val Leu Ser Pro Glu Asp Gly Lys Ala Asp	
84 89 94 99	
att gtg aga gcc gct cag gac ttt tgc cag tta gta gcc cag aag caa	513
Ile Val Arg Ala Ala Gln Asp Phe Cys Gln Leu Val Ala Gln Lys Gln	
100 105 110 115	
agg aga ccc aaa gat ttg gat gta gat atg tta gtt tac tca gtt caa	561
Arg Arg Pro Lys Asp Leu Asp Val Asp Met Leu Val Tyr Ser Val Gln	
116 121 126 131	
atg gtt gtc ctg atc ctg att tag tactgaagtt cggctcctgtg gacagcacac	615
Met Val Val Leu Ile Leu Ile *	
132 137	
gaggctttct tacctggcac atcagattga ctgagattgt ctctttgcct tcccatctaa	675
acatcagtta tgaggacttt ttctctgccc ttctgtcatta tgcagcctgt gaacagcgtc	735
tgaggaaagtc gtggtcattg gttgcataat tccatttgag cttatggagg aaaggaccaa	795
gtgactctga ttttagaaaag cacctatgaa accctgtaca cacctatgaa accctgtaca	855
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aatggaaaga aagttttatt tccttttttg tttgatgggc agtatgcat attataccca	1695

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aaaataaatt ttacatgttc tcttttatga cagagagcag cactgggttct gttattttta 1995  
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Ser Pro Glu Pro Val Gly Pro Pro Ala Pro Gly Leu Pro Phe Cys Cys  
13 18 23 28  
gga gga tcc ctg ctg gcg gtt gtg gtg ctg ctt gcg ctg ccg gtg gcc 144  
Gly Gly Ser Leu Leu Ala Val Val Val Leu Leu Ala Leu Pro Val Ala  
29 34 39 44  
tgg ggt caa tgc aat gcc cca gaa tgg ctt cca ttt gcc agg cct acc 192  
Trp Gly Gln Cys Asn Ala Pro Glu Trp Leu Pro Phe Ala Arg Pro Thr  
45 50 55 60  
aac cta act gat gag ttt gag ttt ccc att ggg aca tat ctg aac tat 240  
Asn Leu Thr Asp Glu Phe Glu Phe Pro Ile Gly Thr Tyr Leu Asn Tyr  
61 66 71 76  
gaa tgc cgc cct ggt tat tcc gga aga ccg ttt tct atc atc tgc cta 288  
Glu Cys Arg Pro Gly Tyr Ser Gly Arg Pro Phe Ser Ile Ile Cys Leu  
77 82 87 92  
aaa aac tca gtc tgg act ggt gct aag gac agg tgc aga cgt aaa tca 336  
Lys Asn Ser Val Trp Thr Gly Ala Lys Asp Arg Cys Arg Arg Lys Ser  
93 98 103 108  
tgt cgt aat cct cca gat cct gtg aat ggc atg gtg cat gtg atc aaa 384  
Cys Arg Asn Pro Pro Asp Pro Val Asn Gly Met Val His Val Ile Lys



109											114											119											124											
ggc atc cag ttc gga tcc caa att aaa tat tct tgt act aaa gga tac																																												432
Gly Ile Gln Phe Gly Ser Gln Ile Lys Tyr Ser Cys Thr Lys Gly Tyr																																												
125											130											135											140											
cga ctc att ggt tcc tcg tct gcc aca tgc atc atc tca ggt gat act																																												480
Arg Leu Ile Gly Ser Ser Ser Ala Thr Cys Ile Ile Ser Gly Asp Thr																																												
141											146											151											156											
gtc att tgg gat aat gaa aca cct att tgt gac aga att cct tgt ggg																																												528
Val Ile Trp Asp Asn Glu Thr Pro Ile Cys Asp Arg Ile Pro Cys Gly																																												
157											162											167											172											
cta ccc ccc acc atc acc aat gga gat ttc att agc acc aac aga gag																																												576
Leu Pro Pro Thr Ile Thr Asn Gly Asp Phe Ile Ser Thr Asn Arg Glu																																												
173											178											183											188											
aat ttt cac tat gga tca gtg gtg acc tac cgc tgc aat cct gga agc																																												624
Asn Phe His Tyr Gly Ser Val Val Thr Tyr Arg Cys Asn Pro Gly Ser																																												
189											194											199											204											
gga ggg aga aag gtg ttt gag ctt gtg ggt gag ccc tcc ata tac tgc																																												672
Gly Gly Arg Lys Val Phe Glu Leu Val Gly Glu Pro Ser Ile Tyr Cys																																												
205											210											215											220											
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Thr Ser Asn Asp Asp Gln Val Gly Ile Trp Ser Gly Pro Ala Pro Gln																																												
221											226											231											236											
tgc att ata cct aac aaa tgc acg cct cca aat gtg gaa aat gga ata																																												768
Cys Ile Ile Pro Asn Lys Cys Thr Pro Pro Asn Val Glu Asn Gly Ile																																												
237											242											247											252											
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Leu Val Ser Asp Asn Arg Ser Leu Phe Ser Leu Asn Glu Val Val Glu																																												
253											258											263											268											
ttt agg tgt cag cct ggc ttt gtc atg aaa gga ccc cgc cgt gtg aag																																												864
Phe Arg Cys Gln Pro Gly Phe Val Met Lys Gly Pro Arg Arg Val Lys																																												
269											274											279											284											
tgc cag gcc ctg aac aaa tgg gag ccg gag cta cca agc tgc tcc agg																																												912
Cys Gln Ala Leu Asn Lys Trp Glu Pro Glu Leu Pro Ser Cys Ser Arg																																												
285											290											295											300											
gta tgt cag cca cct cca gat gtc ctg cat gct gag cgt acc caa agg																																												960
Val Cys Gln Pro Pro Pro Asp Val Leu His Ala Glu Arg Thr Gln Arg																																												
301											306											311											316											
gac aag gac aac ttt tca cct ggg cag gaa gtg ttc tac agc tgt gag																																												1008
Asp Lys Asp Asn Phe Ser Pro Gly Gln Glu Val Phe Tyr Ser Cys Glu																																												
317											322											327											332											
ccc ggc tac gac ctc aga ggg gct gcg tct atg cgc tgc aca ccc cag																																												1056
Pro Gly Tyr Asp Leu Arg Gly Ala Ala Ser Met Arg Cys Thr Pro Gln																																												
333											338											343											348											

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Gly Asp Trp Ser Pro Ala Ala Pro Thr Cys Glu Val Lys Ser Cys Asp	
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Asp Phe Met Gly Gln Leu Leu Asn Gly Arg Val Leu Phe Pro Val Asn	
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Leu Gln Leu Gly Ala Lys Val Asp Phe Val Cys Asp Glu Gly Phe Gln	
381 386 391 396	
tta aaa ggc agc tct gct agt tac tgt gtc ttg gct gga atg gaa agc	1248
Leu Lys Gly Ser Ser Ala Ser Tyr Cys Val Leu Ala Gly Met Glu Ser	
397 402 407 412	
ctt tgg aat agc agt gtt cca gtg tgt gaa caa atc ttt tgt cca agt	1296
Leu Trp Asn Ser Ser Val Pro Val Cys Glu Gln Ile Phe Cys Pro Ser	
413 418 423 428	
cct cca gtt att cct aat ggg aga cac aca gga aaa cct ctg gaa gtc	1344
Pro Pro Val Ile Pro Asn Gly Arg His Thr Gly Lys Pro Leu Glu Val	
429 434 439 444	
ttt ccc ttt ggg aaa aca gta aat tac aca tgc gac ccc cac cca gac	1392
Phe Pro Phe Gly Lys Thr Val Asn Tyr Thr Cys Asp Pro His Pro Asp	
445 450 455 460	
aga ggg acg agc ttc gac ctc att gga gag agc acc atc cgc tgc aca	1440
Arg Gly Thr Ser Phe Asp Leu Ile Gly Glu Ser Thr Ile Arg Cys Thr	
461 466 471 476	
agt gac cct caa ggg aat ggg gtt tgg agc agc cct gcc cct cgc tgt	1488
Ser Asp Pro Gln Gly Asn Gly Val Trp Ser Ser Pro Ala Pro Arg Cys	
477 482 487 492	
gga att ctg ggt cac tgt caa gcc cca gat cat ttt ctg ttt gcc aag	1536
Gly Ile Leu Gly His Cys Gln Ala Pro Asp His Phe Leu Phe Ala Lys	
493 498 503 508	
ttg aaa acc caa acc aat gca tct gac ttt ccc att ggg aca tct tta	1584
Leu Lys Thr Gln Thr Asn Ala Ser Asp Phe Pro Ile Gly Thr Ser Leu	
509 514 519 524	
aag tac gaa tgc cgt cct gag tac tac ggg agg cca ttc tct atc aca	1632
Lys Tyr Glu Cys Arg Pro Glu Tyr Tyr Gly Arg Pro Phe Ser Ile Thr	
525 530 535 540	
tgt cta gat aac ctg gtc tgg tca agt ccc aaa gat gtc tgt aaa cgt	1680
Cys Leu Asp Asn Leu Val Trp Ser Ser Pro Lys Asp Val Cys Lys Arg	
541 546 551 556	
aaa tca tgt aaa act cct cca gat cca gtg aat ggc atg gtg cat gtg	1728
Lys Ser Cys Lys Thr Pro Pro Asp Pro Val Asn Gly Met Val His Val	
557 562 567 572	

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Ile Thr Asp Ile Gln Val Gly Ser Arg Ile Asn Tyr Ser Cys Thr Thr	
573 578 583 588	
ggg cac cga ctc att ggt cac tca tct gct gaa tgt atc ctc tcg ggc	1824
Gly His Arg Leu Ile Gly His Ser Ser Ala Glu Cys Ile Leu Ser Gly	
589 594 599 604	
aat gct gcc cat tgg agc acg aag ccg cca att tgt caa cga att cct	1872
Asn Ala Ala His Trp Ser Thr Lys Pro Pro Ile Cys Gln Arg Ile Pro	
605 610 615 620	
tgt ggg cta ccc ccc acc atc gcc aat gga gat ttc att agc acc aac	1920
Cys Gly Leu Pro Pro Thr Ile Ala Asn Gly Asp Phe Ile Ser Thr Asn	
621 626 631 636	
aga gag aat ttt cac tat gga tca gtg gtg acc tac cgc tgc aat ccc	1968
Arg Glu Asn Phe His Tyr Gly Ser Val Val Thr Tyr Arg Cys Asn Pro	
637 642 647 652	
gga agc gga ggg aga aag gtg ttt gag ctt gtg ggt gag ccc tcc ata	2016
Gly Ser Gly Gly Arg Lys Val Phe Glu Leu Val Gly Glu Pro Ser Ile	
653 658 663 668	
tac tgc acc agc aat gac gat caa gtg ggc atc tgg agc ggc ccg gcc	2064
Tyr Cys Thr Ser Asn Asp Asp Gln Val Gly Ile Trp Ser Gly Pro Ala	
669 674 679 684	
cct cag tgc att ata cct aac aaa tgc acg cct cca aat gtg gaa aat	2112
Pro Gln Cys Ile Ile Pro Asn Lys Cys Thr Pro Pro Asn Val Glu Asn	
685 690 695 700	
gga ata ttg gta tct gac aac aga agc tta ttt tcc tta aat gaa gtt	2160
Gly Ile Leu Val Ser Asp Asn Arg Ser Leu Phe Ser Leu Asn Glu Val	
701 706 711 716	
gtg gag ttt agg tgt cag cct ggc ttt gtc atg aaa gga ccc cgc cgt	2208
Val Glu Phe Arg Cys Gln Pro Gly Phe Val Met Lys Gly Pro Arg Arg	
717 722 727 732	
gtg aag tgc cag gcc ctg aac aaa tgg gag ccg gag cta cca agc tgc	2256
Val Lys Cys Gln Ala Leu Asn Lys Trp Glu Pro Glu Leu Pro Ser Cys	
733 738 743 748	
tcc agg gta tgt cag cca cct cca gat gtc ctg cat gct gag cgt acc	2304
Ser Arg Val Cys Gln Pro Pro Pro Asp Val Leu His Ala Glu Arg Thr	
749 754 759 764	
caa agg gac aag gac aac ttt tca ccc ggg cag gaa gtg ttc tac agc	2352
Gln Arg Asp Lys Asp Asn Phe Ser Pro Gly Gln Glu Val Phe Tyr Ser	
765 770 775 780	
tgt gag ccc ggc tat gac ctc aga ggg gct gcg tct atg cgc tgc aca	2400
Cys Glu Pro Gly Tyr Asp Leu Arg Gly Ala Ala Ser Met Arg Cys Thr	
781 786 791 796	
ccc cag gga gac tgg agc cct gca gcc ccc aca tgt gaa gtg aaa tcc	2448

Pro Gln Gly Asp Trp Ser Pro Ala Ala Pro Thr Cys Glu Val Lys Ser	
797 802 807 812	
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Cys Asp Asp Phe Met Gly Gln Leu Leu Asn Gly Arg Val Leu Phe Pro	
813 818 823 828	
gta aat ctc cag ctt gga gca aaa gtg gat ttt gtt tgt gat gaa gga	2544
Val Asn Leu Gln Leu Gly Ala Lys Val Asp Phe Val Cys Asp Glu Gly	
829 834 839 844	
ttt caa tta aaa ggc agc tct gct agt tat tgt gtc ttg gct gga atg	2592
Phe Gln Leu Lys Gly Ser Ser Ala Ser Tyr Cys Val Leu Ala Gly Met	
845 850 855 860	
gaa agc ctt tgg aat agc agt gtt cca gtg tgt gaa caa atc ttt tgt	2640
Glu Ser Leu Trp Asn Ser Ser Val Pro Val Cys Glu Gln Ile Phe Cys	
861 866 871 876	
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Pro Ser Pro Pro Val Ile Pro Asn Gly Arg His Thr Gly Lys Pro Leu	
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Cys Thr Ser Asp Pro Gln Gly Asn Gly Val Trp Ser Ser Pro Ala Pro	
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Gly Val Met Val Phe Val His Ala Arg Asn Ala Thr Val Arg Thr Ala  
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Gln Ile Tyr Ala Ala Lys Arg Gly Ser Phe Val Asp Leu Gly Ile Leu	
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Asn Val Glu Glu Ala Val Lys Trp Ile Ser Tyr Thr Tyr Leu Tyr Val	
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Asp Lys Arg Leu Trp Gly Trp Ala Ser Pro Leu Arg Gln Phe Ser Ile				
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Asp Lys Leu Lys Asp Met Arg Lys Asp Glu Ile Gly His Ile Leu His				
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Lys Lys Asp Phe Tyr Lys Lys Phe Leu Tyr Glu Pro Phe Pro Val Glu	
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Ser Ser Leu Leu Gly Val Leu Ser Asp His Leu Asn Ala Glu Ile Ala	
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ggg ggt aca att aca tct aag caa gat gca ttg gat tat atc acc tgg	3168

Gly	Gly	Thr	Ile	Thr	Ser	Lys	Gln	Asp	Ala	Leu	Asp	Tyr	Ile	Thr	Trp	
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Thr	Tyr	Phe	Phe	Arg	Arg	Leu	Ile	Met	Asn	Pro	Ser	Tyr	Tyr	Asn	Leu	
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Gly	Asp	Val	Ser	His	Asp	Ser	Val	Asn	Lys	Phe	Leu	Ser	His	Leu	Ile	
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gag	aag	tcc	ctg	att	gaa	ttg	gaa	ctt	tcc	tac	tgt	att	gaa	att	gga	3312
Glu	Lys	Ser	Leu	Ile	Glu	Leu	Glu	Leu	Ser	Tyr	Cys	Ile	Glu	Ile	Gly	
1089					1094					1099					1104	
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Glu	Glu	Tyr	Thr	Asp	Leu	Pro	Val	Arg	His	Asn	Glu	Asp	His	Met	Asn	
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Asp	Ser	Pro	His	Thr	Lys	Ala	His	Leu	Leu	Leu	Gln	Ala	His	Leu	Ser	
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cga	gcc	atg	cta	ccc	tgc	cca	gat	tat	gac	act	gat	acc	aaa	aca	gtc	3648
Arg	Ala	Met	Leu	Pro	Cys	Pro	Asp	Tyr	Asp	Thr	Asp	Thr	Lys	Thr	Val	
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Leu	Asp	Gln	Ala	Leu	Arg	Val	Cys	Gln	Ala	Met	Leu	Asp	Val	Ala	Ala	
1217					1222					1227					1232	
aac	cag	ggc	tgg	ctg	gtg	act	gtc	ctg	aat	atc	acc	aac	ctg	att	cag	3744
Asn	Gln	Gly	Trp	Leu	Val	Thr	Val	Leu	Asn	Ile	Thr	Asn	Leu	Ile	Gln	
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Ile Met Lys Gly Pro His Ala Arg Gly Arg Thr Ser Ile Glu Cys Leu				
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Pro Glu Leu Ile His Ala Cys Gly Gly Lys Asp His Val Phe Ser Ser				
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Met Val Glu Ser Glu Leu His Ala Ala Lys Thr Lys Gln Ala Trp Asn				
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Phe Leu Ser His Leu Pro Val Ile Asn Val Gly Ile Ser Val Lys Gly				
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Ser Trp Asp Asp Leu Val Glu Gly His Asn Glu Leu Ser Val Ser Thr				
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Leu Thr Ala Asp Lys Arg Asp Asp Asn Lys Trp Ile Lys Leu His Ala				
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Lys Ser Lys Asp Glu Gly Trp Phe Leu Ile Leu Gly Glu Val Asp Lys				
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Val Ala Ser Leu Ser Phe Tyr Thr Pro Glu Ile Pro Gly Arg Tyr Ile				
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Tyr Thr Leu Tyr Phe Met Ser Asp Cys Tyr Leu Gly Leu Asp Gln Gln				
1457	1462	1467	1472	
tat gac aat cta tct caa cgt tac aca agc gag tct ttc tgc aca ggt				4464
Tyr Asp Asn Leu Ser Gln Arg Tyr Thr Ser Glu Ser Phe Cys Thr Gly				
1473	1478	1483	1488	
caa cac caa ggt ctc tga ttccct gactgacctg gcattaaagt aacttgacct				4518
Gln His Gln Gly Leu *				
1489	1494			



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Ala Glu Gly Pro Val Gly Asp Gly Glu Leu Trp Gln Thr Trp Leu Pro  
4 9 14 19

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Pro Pro Gln Leu Leu Thr Arg Asn Val Val Phe Gly Leu Gly Gly Glu	
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Leu Phe Leu Trp Asp Gly Glu Asp Ser Ser Phe Leu Val Val Arg Leu	
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Arg Leu Leu Cys Ile Asn Pro Pro Leu Phe Glu Ile Tyr Gln Val Leu	
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Leu Ser Pro Thr Gln His His Val Ala Leu Ile Gly Ile Lys Gly Leu	
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Gly Gly Lys Ser Thr Val Asn Cys Ser Thr Thr Pro Val Ala Glu Arg	
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Phe Phe Thr Ser Ser Thr Ser Leu Thr Leu Lys His Ala Ala Trp Tyr	
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Pro Ser Glu Ile Leu Asp Pro His Val Val Leu Leu Thr Ser Asp Asn	
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Val Ile Arg Ile Tyr Ser Leu Arg Glu Pro Gln Thr Pro Thr Asn Val	
196 201 206 211	
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Ile Ile Leu Ser Glu Ala Glu Glu Glu Ser Leu Val Leu Asn Lys Gly	
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Gly Tyr Asp Ala Cys Ala Val Leu Cys Leu Pro Cys Val Pro Asn Ile	
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Asp Phe Ser Cys Pro Val Lys Leu His Arg Asp Pro Lys Cys Pro Ser	
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Arg Tyr His Cys Thr His Glu Ala Gly Val His Ser Val Gly Leu Thr	
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Trp Ile His Lys Leu His Lys Phe Leu Gly Ser Asp Glu Glu Asp Lys	
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Ile Leu Cys Thr Arg Pro Leu Pro Cys Arg Gln Pro Ala Pro Ile Arg	
452 457 462 467	
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Gly Phe Trp Ile Val Pro Asp Ile Leu Gly Pro Thr Met Ile Cys Ile	
468 473 478 483	
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708	713	718	723	
cat ata agg gaa atg gtg aag caa atc aat gat atc cgc aat cat gta				2265
His Ile Arg Glu Met Val Lys Gln Ile Asn Asp Ile Arg Asn His Val				
724	729	734	739	
aac ttc tga caccacc aggagctgac tcacacctga actgaacacc attgaaggct				2321
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Ser Cys Ser Asp Glu Ser Ser Asn Ser Asn Ser Ser Arg Lys Ser Asp	
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Asn His Ser Pro Ala Val Val Thr Thr Thr Val Ser Ser Lys Lys Gln	
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Pro Ser Val Leu Val Thr Phe Pro Lys Glu Glu Arg Lys Ser Val Ser	
37 / 42 47 52	

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Gly Lys Ala Ser Ile Lys Leu Ser Glu Thr Ile Ser Glu Gly Thr Ser	
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aat tct cta tct act tgt aca aaa tct ggt cca tct ccc ctt tct tct	715
Asn Ser Leu Ser Thr Cys Thr Lys Ser Gly Pro Ser Pro Leu Ser Ser	
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cca aat ggg aag tta aca gta gca agt cct aag cgt ggg caa aag agg	763
Pro Asn Gly Lys Leu Thr Val Ala Ser Pro Lys Arg Gly Gln Lys Arg	
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101 106 111 116	
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Pro Ser Thr Val Ile Ser Arg Val Ile Gly Arg Gly Gly Cys Asn Ile	
117 122 127 132	
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Asn Ala Ile Arg Glu Phe Thr Gly Ala His Ile Asp Ile Asp Lys Gln	
133 138 143 148	
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Lys Asp Lys Thr Gly Asp Arg Ile Ile Thr Ile Arg Gly Gly Thr Glu	
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Ser Thr Arg Gln Ala Thr Gln Leu Ile Asn Ala Leu Ile Lys Asp Pro	
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Asp Lys Glu Ile Asp Glu Leu Ile Pro Lys Asn Arg Leu Lys Ser Ser	
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Asn Thr Ser Leu Met Gly Ile Lys Met Thr Thr Val Ala Leu Ser Ser	
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Thr Ser Gln Thr Ala Thr Ala Leu Thr Val Pro Ala Ile Ser Ser Ala	
229 234 239 244	
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Ser Thr His Lys Thr Ile Lys Asn Pro Val Asn Asn Val Arg Pro Gly	
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Phe Pro Val Ser Leu Pro Leu Ala Tyr Pro Pro Pro Gln Phe Ala His	
261 266 271 276	
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Ala Leu Leu Ala Ala Gln Thr Phe Gln Gln Ile Arg Pro Pro Arg Leu	
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Pro Met Thr His Phe Gly Gly Thr Phe Pro Pro Ala Gln Ser Thr Trp	
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Pro Lys Pro His Met Val Pro Arg His Ser Asn Gln Asn Ser Ser Gly	
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Ser Gln Val Asn Ser Ala Gly Ser Leu Thr Ser Ser Pro Thr Thr Thr	
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Thr Ser Ser Ser Ala Ser Thr Val Pro Gly Thr Ser Thr Asn Gly Ser	
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Pro Ser Ser Pro Ser Val Arg Arg Gln Leu Phe Val Thr Val Val Lys	
373	378 383 388
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Thr Ser Asn Ala Thr Thr Thr Thr Val Thr Thr Thr Ala Ser Asn Asn	
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Asn Thr Ala Pro Thr Asn Ala Thr Tyr Pro Met Pro Thr Ala Lys Glu	
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His Tyr Pro Val Ser Ser Pro Ser Ser Pro Ser Pro Pro Ala Gln Pro	
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Gly Gly Val Ser Arg Asn Ser Pro Leu Asp Cys Gly Ser Ala Ser Pro	
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aat aaa gtg gca tct tcc tcc gaa cag gaa gca ggt agt cca cca gta	1867
Asn Lys Val Ala Ser Ser Ser Glu Gln Glu Ala Gly Ser Pro Pro Val	
453	458 463 468
gta gaa aca aca aac act aga cct cca aac agc agc agt tct tct ggg	1915
Val Glu Thr Thr Asn Thr Arg Pro Pro Asn Ser Ser Ser Ser Ser Gly	
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Ser Val Pro Ser Ser Val Gln Leu Pro Ser Thr Leu Ser Thr Gln Ser				
597	602	607	612	
gct tgt cag aat tca gta cat cca gca aat aag cct att gct ccc aat				2347
Ala Cys Gln Asn Ser Val His Pro Ala Asn Lys Pro Ile Ala Pro Asn				
613	618	623	628	
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Phe Ser Ala Pro Leu Pro Phe Gly Pro Phe Ser Thr Leu Phe Glu Asn				
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agc cct act tct gct cat gcc ttc tgg gga gga tct gtt gtt tca tct				2443
Ser Pro Thr Ser Ala His Ala Phe Trp Gly Gly Ser Val Val Ser Ser				
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Gln Ser Thr Pro Glu Ser Met Leu Ser Gly Lys Ser Ser Tyr Leu Pro				
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aat tca gat cct tta cat cag tct gat act tcc aaa gct cca ggt ttt				2539
Asn Ser Asp Pro Leu His Gln Ser Asp Thr Ser Lys Ala Pro Gly Phe				
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aga cca cca tta cag aga cct gct cca agt ccc tca ggt att gtc aat				2587
Arg Pro Pro Leu Gln Arg Pro Ala Pro Ser Pro Ser Gly Ile Val Asn				
693	698	703	708	
atg gac tcg cca tat ggt tct gta aca cct tct tca aca cat ttg gga				2635
Met Asp Ser Pro Tyr Gly Ser Val Thr Pro Ser Ser Thr His Leu Gly				
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Asn Phe Ala Ser Asn Ile Ser Gly Gly Gln Met Tyr Gly Pro Gly Ala				
725	730	735	740	



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Pro Leu Gly Gly Ala Pro Ala Ala Ala Asn Phe Asn Arg Gln His Phe	
741 746 751 756	
tcc ccg ctt agt ttg ttg act ccg tgt tca tca gca tca aat gat tct	2779
Ser Pro Leu Ser Leu Leu Thr Pro Cys Ser Ser Ala Ser Asn Asp Ser	
757 762 767 772	
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Ser Ala Gln Ser Val Ser Ser Gly Val Arg Ala Pro Ser Pro Ala Pro	
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Ser Ser Val Pro Leu Gly Ser Glu Lys Pro Ser Asn Val Ser Gln Asp	
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agg aaa gtt cca gtc cct att ggg act gaa cgt tct gca cgt atc agg	2923
Arg Lys Val Pro Val Pro Ile Gly Thr Glu Arg Ser Ala Arg Ile Arg	
805 810 815 820	
caa act gga acg tca gct cca tct gtt att ggg agc aat ttg tct aca	2971
Gln Thr Gly Thr Ser Ala Pro Ser Val Ile Gly Ser Asn Leu Ser Thr	
821 826 831 836	
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Ser Val Gly His Ser Gly Ile Trp Ser Phe Glu Gly Ile Gly Gly Asn	
837 842 847 852	
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Gln Asp Lys Val Asp Trp Cys Asn Pro Gly Met Gly Asn Pro Met Ile	
853 858 863 868	
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His Arg Pro Met Ser Asp Pro Gly Val Phe Ser Gln His Gln Ala Met	
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Glu Arg Asp Ser Thr Gly Ile Val Thr Pro Ser Gly Thr Phe His Gln	
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His Val Pro Ala Gly Tyr Met Asp Phe Pro Lys Val Gly Gly Met Pro	
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Phe Ser Val Tyr Gly Asn Ala Met Ile Pro Pro Val Ala Pro Ile Pro	
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Val His Met Asn Gln Leu Gly *	
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gttatgtaaa  agtaggaccc caaccgacag atcctattgc tcgcgccacc tgggcgcgcg      180
gagctttgct  cgtttactat tgaaaaagtt ccagcgcggg aaactgaacc cggagctttg      240
cgcacgcccc  agccctcaag taatgtgggt tgtggttttt gttgttggtg tcgccacgca      300
tgcgctcttc  tgccgtgtgg ctatttgatt gtgtcaactc ttctgattag aatggcgcca      360
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gggtcaccac  gagcttggct tacttgtctc atccttcctt tgcttggtat cattttctca      600
gttctcccaa  aagcc atg tcc cgg ccc ttg ctc atc acc ttc acc cca gcc      651
          Met Ser Arg Pro Leu Leu Ile Thr Phe Thr Pro Ala
          1              5              10

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Thr Asp Pro Ser Asp Leu Trp Lys Asp Gly Gln Gln Gln Pro Gln Pro
13              18              23              28

gag aag cca gag tcc acc ctg gat ggg gct gca gcc cga gct ttc tat      747
Glu Lys Pro Glu Ser Thr Leu Asp Gly Ala Ala Ala Arg Ala Phe Tyr
29              34              39              44

gag gcc ctg att ggg gat gag agc agc gct cct gac tcc cag aga tct      795
Glu Ala Leu Ile Gly Asp Glu Ser Ser Ala Pro Asp Ser Gln Arg Ser
45              50              55              60

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Gln Thr Glu Pro Ala Arg Glu Arg Lys Arg Lys Lys Lys Lys Thr	
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Lys Ala Pro Ala Ala Glu Ala Val Ala Glu Gly Ala Ser Gly Arg His	
77 82 87 92	
gga caa ggg aga tcc ctt gag gct gag gat aag atg act cac cgg ata	939
Gly Gln Gly Arg Ser Leu Glu Ala Glu Asp Lys Met Thr His Arg Ile	
93 98 103 108	
ctg agg gca gcc cag gag ggg gac ctg cca gaa ctt agg aga ctg ctg	987
Leu Arg Ala Ala Gln Glu Gly Asp Leu Pro Glu Leu Arg Arg Leu Leu	
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Glu Pro His Glu Ala Gly Gly Ala Gly Gly Asn Ile Asn Ala Arg Asp	
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Ala Ala Val Ser Tyr Leu Leu Gly Arg Gly Ala Ala Trp Val Gly Val	
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Cys Glu Leu Ser Gly Arg Asp Ala Ala Gln Leu Ala Glu Glu Ala Gly	
173 178 183 188	
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Phe Pro Glu Val Ala Arg Met Val Arg Glu Ser His Gly Glu Thr Arg	
189 194 199 204	
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Ser Pro Glu Asn Arg Ser Pro Thr Pro Ser Leu Gln Tyr Cys Glu Asn	
205 210 215 220	
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Cys Asp Thr His Phe Gln Asp Ser Asn His Arg Thr Ser Thr Ala His	
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Leu Leu Ser Leu Ser Gln Gly Pro Gln Pro Pro Asn Leu Pro Leu Gly	
237 242 247 252	
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Val Pro Ile Ser Ser Pro Gly Phe Lys Leu Leu Leu Arg Gly Gly Trp	
253 258 263 268	
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Glu Pro Gly Met Gly Leu Gly Pro Arg Gly Glu Gly Arg Ala Asn Pro	
269 274 279 284	
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Ile	Pro	Thr	Val	Leu	Lys	Arg	Asp	Gln	Glu	Gly	Leu	Gly	Tyr	Arg	Ser	
285					290					295					300	
gca	ccc	cag	ccc	cga	gtg	aca	cat	ttc	cca	gct	tgg	gat	acc	cga	gct	1563
Ala	Pro	Gln	Pro	Arg	Val	Thr	His	Phe	Pro	Ala	Trp	Asp	Thr	Arg	Ala	
301					306					311					316	
gtg	gct	ggg	agg	gag	aga	ccc	cct	cgg	gtg	gcc	aca	ctg	agc	tgg	agg	1611
Val	Ala	Gly	Arg	Glu	Arg	Pro	Pro	Arg	Val	Ala	Thr	Leu	Ser	Trp	Arg	
317					322					327					332	
gag	gag	aga	agg	agg	gag	gag	aaa	gac	agg	gct	tgg	gag	cgg	gat	cta	1659
Glu	Glu	Arg	Arg	Arg	Glu	Glu	Lys	Asp	Arg	Ala	Trp	Glu	Arg	Asp	Leu	
333					338					343					348	
agg	act	tac	atg	aac	ctc	gag	ttc	tga	ctttg	gtaaagtctg	accctagtct					1711
Arg	Thr	Tyr	Met	Asn	Leu	Glu	Phe	*								
349					354											
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attaaaagaa	gctgtacctc	tgaagataaa	gtgggccagt	ctgaagctct	atctagagtc											240
cttcaagtag	ctaagaaa	atg aag ttg	att tct aat	gga gga	gat tct gct											291
		Met Lys	Leu Ile	Ser Asn	Gly Gly	Asp Ser	Ala									
		1		5												
gta gaa atg	gat cgg aga	aat gtg tct	gaa ttt aag	agt att aaa	aaa											339
Val Glu Met	Asp Arg Arg	Asn Val Ser	Glu Phe	Lys Ser Ile	Lys Lys											
12		17		22												27
aca tca tta	ata aaa aac	tgt gat tct	aaa agc cag	aag tat aat	tgt											387
Thr Ser Leu	Ile Lys Asn	Cys Asp Ser	Lys Ser Gln	Lys Tyr Asn	Cys											
28		33		38												43

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gca ttt tgg gca ttt aca gtg ttt ctt gga gat ata att tta ctc aca Ala Phe Trp Ala Phe Thr Val Phe Leu Gly Asp Ile Ile Leu Leu Thr 92 97 102 107	579
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tca aca ttt agc agt cag tta tta aat ctt ggg agt tat tca tct att Ser Thr Phe Ser Ser Gln Leu Leu Asn Leu Gly Ser Tyr Ser Ser Ile 124 129 134 139	675
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Tyr Thr Leu Glu Asn Leu Glu Leu His Thr Thr Pro Trp Ser Ser Cys	
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Glu Cys Leu Phe Asp Asp Asp Ile Arg Ala Ile Thr Phe Lys Ala Lys	
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Phe Gln Lys Ser Ala Pro Ser Phe Val Lys Ile Ser Asp Leu Ala Thr	
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His Leu Glu Asp Lys Cys Ser Gly Val Val Leu Ile Lys Ala Gln Ile	
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Arg Ile Tyr Lys Gln Cys Phe Ser Cys Leu Pro Phe Thr Met Lys Lys	
380 385 390 395	
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Ile Tyr Tyr Arg Pro Ala Leu Met Thr Ala Ile Asp Gly Arg His Asp	
396 401 406 411	
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Val Cys Ile Arg Val Glu Ser Lys Leu Ile Glu Lys Ile Leu Leu Asn	
412 417 422 427	
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Ile Ser Ala Asp Cys Leu Asn Arg Val Ile Val Pro Ser Ser Glu Ile	
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Thr Tyr Gly Met Val Val Ala Asp Leu Phe His Ser Leu Leu Ala Val	
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Ser Ala Glu Pro Cys Val Leu Lys Ile Gln Ser Leu Phe Val Leu Asp	
460 465 470 475	
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Glu Asn Ser Tyr Pro Leu Gln Gln Asp Phe Ser Leu Leu Asp Phe Tyr	
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Pro Asp Ile Val Lys His Gly Ala Asn Ala Arg Leu \*  
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 aaccggccg tgggatcccg gataggagga ggaggggacc cataggacgc gttaac 236  
 atg gac ctg gaa aac aaa gtg aag aag atg ggc tta ggt cac gag caa 284  
 Met Asp Leu Glu Asn Lys Val Lys Lys Met Gly Leu Gly His Glu Gln  
 1 5 10 15  
 gga ttt gga gcc cct tgt tta aaa tgc aaa gaa aaa tgt gaa gga ttc 332  
 Gly Phe Gly Ala Pro Cys Leu Lys Cys Lys Glu Lys Cys Glu Gly Phe



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49	54	59	64	
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Lys Leu Phe Glu Asp Thr Lys Tyr Thr Thr Leu Ile Ala Lys Leu Lys				
65	70	75	80	
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Ser Asp Gly Ile Pro Met Tyr Lys Arg Asn Val Met Ile Leu Thr Asn				
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Pro Val Ala Ala Lys Lys Asn Val Ser Ile Asn Thr Val Thr Tyr Glu				
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Trp Ala Pro Pro Val Gln Asn Gln Ala Leu Ala Arg Gln Tyr Met Gln				
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Met Leu Pro Lys Glu Lys Gln Pro Val Ala Gly Ser Glu Gly Ala Gln				
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Tyr Arg Lys Lys Gln Leu Ala Lys Gln Leu Pro Ala His Asp Gln Asp				
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Pro Ser Lys Cys His Glu Leu Ser Pro Arg Glu Val Lys Glu Met Glu				
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Gln Phe Val Lys Lys Tyr Lys Ser Glu Ala Leu Gly Val Gly Asp Val				
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aaa ctt ccc tgt gag atg gat gcc caa ggc ccc aaa caa atg aac att				860
Lys Leu Pro Cys Glu Met Asp Ala Gln Gly Pro Lys Gln Met Asn Ile				
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Pro Gly Gly Asp Arg Ser Thr Pro Ala Ala Val Gly Ala Met Glu Asp				
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Leu Ser Met Lys Glu Gly Asp Pro Ala Ile Tyr Ala Glu Arg Ala Gly				
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Tyr Asp Lys Leu Trp His Pro Ala Cys Phe Val Cys Ser Thr Cys His	
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Glu Leu Leu Val Asp Met Ile Tyr Phe Trp Lys Asn Glu Lys Leu Tyr	
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Cys Gly Arg His Tyr Cys Asp Ser Glu Lys Pro Arg Cys Ala Gly Cys	
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Asp Glu Leu Ile Phe Ser Asn Glu Tyr Thr Gln Ala Glu Asn Gln Asn	
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Trp His Leu Lys His Phe Cys Cys Phe Asp Cys Asp Ser Ile Leu Ala	
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Gly Glu Ile Tyr Val Met Val Asn Asp Lys Pro Val Cys Lys Pro Cys	
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Tyr Val Lys Asn His Ala Val Val Cys Gln Gly Cys His Asn Ala Ile	
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Asp Pro Glu Val Gln Arg Val Thr Tyr Asn Asn Phe Ser Trp His Ala	
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Ser Thr Glu Cys Phe Leu Cys Ser Cys Cys Ser Lys Cys Leu Ile Gly	
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Gln Lys Phe Met Pro Val Glu Gly Met Val Phe Cys Ser Val Glu Cys	
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 His Pro Ser Ser Pro Cys Ser Val Lys His Ser Pro Thr Arg Glu Thr  
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Gln Gln Ser Leu Ile Asp Glu Asp Ala Val Cys Cys Ile Cys Met Asp				
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Gly Glu Cys Gln Asn Ser Asn Val Ile Leu Phe Cys Asp Met Cys Asn				
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ctg gcc gtg cac cag gag tgc tac ggg gtg ccc tac atc ccc gag ggc				947
Leu Ala Val His Gln Glu Cys Tyr Gly Val Pro Tyr Ile Pro Glu Gly				
239	244	249	254	
cag tgg ctc tgc cgc cac tgc ctg cag tcg cgg gcc cgg ccc gcc gac				995
Gln Trp Leu Cys Arg His Cys Leu Gln Ser Arg Ala Arg Pro Ala Asp				
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Cys Val Leu Cys Pro Asn Lys Gly Gly Ala Phe Lys Lys Thr Asp Asp				
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Phe Ala Asn Thr Val Phe Ile Glu Pro Ile Asp Gly Val Arg Asn Ile				
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Val Gly Ala Cys Ile Gln Cys His Lys Ala Asn Cys Tyr Thr Ala Phe				
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His Val Thr Cys Ala Gln Lys Ala Gly Leu Tyr Met Lys Met Glu Pro				
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Val Ser Leu Lys Glu Val Pro Asp Tyr Leu Asp His Ile Lys His Pro	
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Arg Leu Arg His Asp	Leu Glu Arg Ala Arg	Leu Leu Ile Glu Leu Leu					
527	532	537	542				
cgc aag cgg gag aag	ctc aag cgt gag cag	gtg aag gtg gag cag gtc	1859				
Arg Lys Arg Glu Lys	Leu Lys Arg Glu Gln	Val Lys Val Glu Gln Val					
543	548	553	558				
gcc atg gag ctg cgg	ctg acc ccg ctg acg	gtg ctg ctg cgc tca gtg	1907				
Ala Met Glu Leu Arg	Leu Thr Pro Leu Thr	Val Leu Leu Arg Ser Val					
559	564	569	574				
ctg gac cag ctg caa	gac aag gac ccc gcc	agg ata ttt gcg cag ccc	1955				
Leu Asp Gln Leu Gln	Asp Lys Asp Pro Ala	Arg Ile Phe Ala Gln Pro					
575	580	585	590				
gtg agt ctg aag gag	gta cca gat tat ttg	gat cac att aaa cat ccc	2003				
Val Ser Leu Lys Glu	Val Pro Asp Tyr Leu	Asp His Ile Lys His Pro					
591	596	601	606				
atg gac ttt gcc aca	atg agg aaa cgg tta	gaa gct caa ggg tat aaa	2051				
Met Asp Phe Ala Thr	Met Arg Lys Arg Leu	Glu Ala Gln Gly Tyr Lys					
607	612	617	622				
aac ctc cat gag ttt	gag gag gat ttt gat	ctc att ata gat aac tgc	2099				
Asn Leu His Glu Phe	Glu Glu Asp Phe Asp	Leu Ile Ile Asp Asn Cys					
623	628	633	638				
atg aag tac aat gcc	agg gac acc gtg ttc	tat aga gcc gcg gtg agg	2147				
Met Lys Tyr Asn Ala	Arg Asp Thr Val Phe	Tyr Arg Ala Ala Val Arg					
639	644	649	654				
ctg cgc gat cag gga	ggt gtt gtt ctg agg	cag gcc cgg cgc gag gtg	2195				
Leu Arg Asp Gln Gly	Gly Val Val Leu Arg	Gln Ala Arg Arg Glu Val					
655	660	665	670				
gac agc atc gcc ttg	gaa gag gcc tcg ggg	atg cac ctg cct gag cgg	2243				
Asp Ser Ile Gly Leu	Glu Glu Ala Ser Gly	Met His Leu Pro Glu Arg					
671	676	681	686				
cct gct gcg gca ccg	cgg cgg cct ttc tcc	tgg gaa gac gtg gac agg	2291				
Pro Ala Ala Ala Pro	Arg Arg Pro Phe Ser	Trp Glu Asp Val Asp Arg					
687	692	697	702				

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Leu Leu Asp Pro Ala Asn Arg Ala His Leu Gly Leu Glu Glu Gln Leu	
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aga gag ctg ctg gac atg ctc gac ctc acc tgc gct atg aag tcc agc	2387
Arg Glu Leu Leu Asp Met Leu Asp Leu Thr Cys Ala Met Lys Ser Ser	
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ggc tcc cgg agc aag cgg gca aag ctg ctc aaa aag gaa att gcc ctt	2435
Gly Ser Arg Ser Lys Arg Ala Lys Leu Leu Lys Lys Glu Ile Ala Leu	
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Leu Arg Asn Lys Leu Ser Gln Gln His Ser Gln Pro Leu Pro Thr Gly	
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Pro Gly Leu Glu Gly Phe Glu Glu Asp Gly Ala Ala Leu Gly Pro Glu	
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gcg ggc gag gaa gga gat aaa tct ccc cct aaa ctt gaa cca tca gat	2579
Ala Gly Glu Glu Gly Asp Lys Ser Pro Pro Lys Leu Glu Pro Ser Asp	
783 788 793 798	
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Ala Leu Pro Leu Pro Ser Asn Ser Glu Thr Asn Ser Glu Pro Pro Thr	
799 804 809 814	
ctc aaa cca gta gaa ctc aac cca gag cag agt aaa ctt ttc aaa aga	2675
Leu Lys Pro Val Glu Leu Asn Pro Glu Gln Ser Lys Leu Phe Lys Arg	
815 820 825 830	
gtc aca ttt gat aat gaa tca cat agc gct tgc act cag agc gca ctg	2723
Val Thr Phe Asp Asn Glu Ser His Ser Ala Cys Thr Gln Ser Ala Leu	
831 836 841 846	
gta agc gga cgc cct cca gag ccc acc cgc gcc agt agt ggc gat gtg	2771
Val Ser Gly Arg Pro Pro Glu Pro Thr Arg Ala Ser Ser Gly Asp Val	
847 852 857 862	
ccg gcg gcg gcg gcc tcc gcg gtg gcg gag cca gca agc gat gta aac	2819
Pro Ala Ala Ala Ala Ser Ala Val Ala Glu Pro Ala Ser Asp Val Asn	
863 868 873 878	
aga cgc act tct gtt ctc ttc tgc aaa tcg aaa agt gta agc ccc cca	2867
Arg Arg Thr Ser Val Leu Phe Cys Lys Ser Lys Ser Val Ser Pro Pro	
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aag tct gcc aag aac act gaa acc cag cca act tct cct cag cta ggg	2915
Lys Ser Ala Lys Asn Thr Glu Thr Gln Pro Thr Ser Pro Gln Leu Gly	
895 900 905 910	
acc aaa acc ttt ttg tct gta gtc ctt ccg agg ttg gag act ctt ctg	2963
Thr Lys Thr Phe Leu Ser Val Val Leu Pro Arg Leu Glu Thr Leu Leu	
911 916 921 926	

cag cca agg aaa agg tcg cgg agc aca tgc gga gac tcc gag gtg gag	3011
Gln Pro Arg Lys Arg Ser Arg Ser Thr Cys Gly Asp Ser Glu Val Glu	
927 932 937 942	
gag gag tcc cca gga aag cgc ctg gac gca ggt ctc acc aac ggc ttt	3059
Glu Glu Ser Pro Gly Lys Arg Leu Asp Ala Gly Leu Thr Asn Gly Phe	
943 948 953 958	
ggg ggt gcg agg agc gag cag gag ccg ggc ggc ggc ctg ggg agg aag	3107
Gly Gly Ala Arg Ser Glu Gln Glu Pro Gly Gly Leu Gly Arg Lys	
959 964 969 974	
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Ala Thr Pro Arg Arg Arg Cys Ala Ser Glu Ser Ser Ile Ser Ser Ser	
975 980 985 990	
aac agc ccg ctc tgc gac tcg agc ttt aat gcg ccc aaa tgt ggg cgg	3203
Asn Ser Pro Leu Cys Asp Ser Ser Phe Asn Ala Pro Lys Cys Gly Arg	
991 996 1001 1006	
ggc aaa ccg gct ctt gtg cga cgg cac acg ctg gag gac cgc agt gag	3251
Gly Lys Pro Ala Leu Val Arg Arg His Thr Leu Glu Asp Arg Ser Glu	
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ctg atc tcc tgc atc gag aat ggg aac tac gcc aag gcg gcc agg atc	3299
Leu Ile Ser Cys Ile Glu Asn Gly Asn Tyr Ala Lys Ala Ala Arg Ile	
1023 1028 1033 1038	
gca gcc gaa gtc ggc cag agc agc atg tgg atc tcc act gat gcc gcc	3347
Ala Ala Glu Val Gly Gln Ser Ser Met Trp Ile Ser Thr Asp Ala Ala	
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gcc tcg gtg ctg gag cct ctg aag gtg gtg tgg gcc aag tgc agc ggc	3395
Ala Ser Val Leu Glu Pro Leu Lys Val Val Trp Ala Lys Cys Ser Gly	
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Tyr Pro Ser Tyr Pro Ala Leu Ile Ile Asp Pro Lys Met Pro Arg Val	
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cct ggc cac cac aac ggc gtc acc atc ccg gcc cca ccc ctg gac gtg	3491
Pro Gly His His Asn Gly Val Thr Ile Pro Ala Pro Pro Leu Asp Val	
1087 1092 1097 1102	
ctg aag att ggg gag cac atg cag acc aag tct gat gag aag ctg ttc	3539
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1103 1108 1113 1118	
ctc gtt ctc ttt ttt gat aat aag aga agt tgg cag tgg ctt cct aag	3587
Leu Val Leu Phe Phe Asp Asn Lys Arg Ser Trp Gln Trp Leu Pro Lys	
1119 1124 1129 1134	
tcc aaa atg gtt ccc ctt ggt att gac gaa act ata gac aag tta aag	3635
Ser Lys Met Val Pro Leu Gly Ile Asp Glu Thr Ile Asp Lys Leu Lys	
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Met Met Glu Gly Arg Asn Ser Ser Ile Arg Lys Ala Val Arg Ile Ala	
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Phe Asp Arg Ala Met Asn His Leu Ser Arg Val His Gly Glu Pro Thr	
1167	1172 1177 1182
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Ser Asp Leu Ser Asp Ile Asp *	
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cacagagcca gagagctgga agtgagagca gatccctaac c atg agc acc agc 173

Met Ser Thr Ser

1

caa cca ggg gcc tgc cca tgc cag gga gct gca agc cgc ccc gcc att 221

Gln Pro Gly Ala Cys Pro Cys Gln Gly Ala Ala Ser Arg Pro Ala Ile

5

10

15

20

ctc tac gca ctt ctg agc tcc agc ctc aag gct gtc ccc cga ccc cgt 269

Leu Tyr Ala Leu Leu Ser Ser Ser Leu Lys Ala Val Pro Arg Pro Arg

21

26

31

36

agc cgc tgc cta tgt agg cag cac cgg ccc gtc cag cta tgt gca cct 317

Ser Arg Cys Leu Cys Arg Gln His Arg Pro Val Gln Leu Cys Ala Pro

37

42

47

52

cat cgc acc tgc cgg gag gcc ttg gat gtt ctg gcc aag aca gtg gcc 365

His Arg Thr Cys Arg Glu Ala Leu Asp Val Leu Ala Lys Thr Val Ala

53

58

63

68

ttc ctc agg aac ctg cca tcc ttc tgg cag ctg cct ccc cag gac cag 413

Phe Leu Arg Asn Leu Pro Ser Phe Trp Gln Leu Pro Pro Gln Asp Gln

69

74

79

84

cgg cgg ctg ctg cag ggt tgc tgg ggc ccc ctc ttc ctg ctt ggg ttg 461

Arg Arg Leu Leu Gln Gly Cys Trp Gly Pro Leu Phe Leu Leu Gly Leu

85

90

95

100

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Ala Gln Asp Ala Val Thr Phe Glu Val Ala Glu Ala Pro Val Pro Ser

101

106

111

116

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Ile Leu Lys Lys Ile Leu Leu Glu Glu Pro Ser Ser Ser Gly Gly Ser

117

122

127

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133

138

143

148

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Leu Gln Cys Cys Leu Glu Ser Phe Trp Ser Leu Gly Leu Ser Pro Lys

149

154

159

164

gaa tat gcc tgc ctg aaa ggg acc atc ctc ttc aac ccc gat gtg cca 701

Glu Tyr Ala Cys Leu Lys Gly Thr Ile Leu Phe Asn Pro Asp Val Pro

165	170	175	180	
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Gly Leu Gln Ala Ala Ser His Ile Gly His Leu Gln Gln Glu Ala His				
181	186	191	196	
tgg gtg ctg tgt gaa gtc ctg gaa ccc tgg tgc cca gca gcc caa ggc				797
Trp Val Leu Cys Glu Val Leu Glu Pro Trp Cys Pro Ala Ala Gln Gly				
197	202	207	212	
cgc ctg acc cgt gtc ctc ctc acg gcc tcc acc ctc aag tcc att ccg				845
Arg Leu Thr Arg Val Leu Leu Thr Ala Ser Thr Leu Lys Ser Ile Pro				
213	218	223	228	
acc agc ctg ctt ggg gac ctc ttc ttt cgc cct atc att gga gat gtt				893
Thr Ser Leu Leu Gly Asp Leu Phe Phe Arg Pro Ile Ile Gly Asp Val				
229	234	239	244	
gac atc gct ggc ctt ctt ggg gac atg ctt ttg ctc agg tga cctgttc				942
Asp Ile Ala Gly Leu Leu Gly Asp Met Leu Leu Leu Arg *				
245	250	255		
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cagaggtgac ccaatgctcc tggagggggc aagcctgtat agacagcact tggtccctta				1062
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gaaaagaaaa atgaagcttt gatggaatgt aaagccaagc ctgttggttag tccaattggt	180
taagttttca gataaagaag aacatgaaca aaatgattcc atttcaggta aaacgggtga	240
gactggtgtt gaagaa atg ata gca aca aga aaa gtt gaa caa gat tca	289
Met Ile Ala Thr Arg Lys Val Glu Gln Asp Ser	



1

5

aag gag aca gta aaa tta tcc cat gaa gat gac cat att ctt gag gac	337
Lys Glu Thr Val Lys Leu Ser His Glu Asp Asp His Ile Leu Glu Asp	
12 17 22 27	
gct gga tct tct gat att tct agt gat gct gct tgt aca aat cca aat	385
Ala Gly Ser Ser Asp Ile Ser Ser Asp Ala Ala Cys Thr Asn Pro Asn	
28 33 38 43	
aag aca gaa aac agc ctt gta ggt ttg cct agt tgt gta gat gaa gtg	433
Lys Thr Glu Asn Ser Leu Val Gly Leu Pro Ser Cys Val Asp Glu Val	
44 49 54 59	
act gaa tgt aat ttg gaa ttg aag gat acc atg ggt att gct gat aaa	481
Thr Glu Cys Asn Leu Glu Leu Lys Asp Thr Met Gly Ile Ala Asp Lys	
60 65 70 75	
act gag aac acc ctt gaa aga aat aaa att gaa ccg ttg ggt tat tgt	529
Thr Glu Asn Thr Leu Glu Arg Asn Lys Ile Glu Pro Leu Gly Tyr Cys	
76 81 86 91	
gaa gat gcg gag tct aat agg cag ttg gag agc act gag ttt aat aaa	577
Glu Asp Ala Glu Ser Asn Arg Gln Leu Glu Ser Thr Glu Phe Asn Lys	
92 97 102 107	
tca aac tta gag gtg gtt gat act agt act ttt gga ccg gaa agt aat	625
Ser Asn Leu Glu Val Asp Thr Ser Thr Phe Gly Pro Glu Ser Asn	
108 113 118 123	
atc ttg gaa aat gct att tgt gat gtg cct gac caa aat tca aaa cag	673
Ile Leu Glu Asn Ala Ile Cys Asp Val Pro Asp Gln Asn Ser Lys Gln	
124 129 134 139	
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Leu Asn Ala Ile Glu Ser Thr Lys Ile Glu Ser His Glu Thr Ala Asn	
140 145 150 155	
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Leu Gln Asp Asp Arg Asn Ser Gln Ser Ser Ser Val Ser Tyr Leu Glu	
156 161 166 171	
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Ser Lys Ser Val Lys Ser Lys His Thr Lys Pro Val Ile His Ser Lys	
172 177 182 187	
caa aac atg acc aca gat gct ccg aag aaa att gtt gca gca aag tat	865
Gln Asn Met Thr Thr Asp Ala Pro Lys Lys Ile Val Ala Ala Lys Tyr	
188 193 198 203	
gaa gta ata cat agc aaa act aaa gtt aat gtc aaa agt gtg aaa cga	913
Glu Val Ile His Ser Lys Thr Lys Val Asn Val Lys Ser Val Lys Arg	
204 209 214 219	
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Asn Thr Asp Val Pro Glu Ser Gln Gln Asn Phe His Arg Pro Val Lys	
220 225 230 235	

gtc aga aaa aaa caa att gat aag gag cca aag att cag agt tgc aat	1009
Val Arg Lys Lys Gln Ile Asp Lys Glu Pro Lys Ile Gln Ser Cys Asn	
236 241 246 251	
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Ser Gly Val Lys Ser Val Lys Asn Gln Ala His Ser Val Leu Lys Lys	
252 257 262 267	
aca tta cag gat caa act tta gta caa att ttc aag ccc tta act cat	1105
Thr Leu Gln Asp Gln Thr Leu Val Gln Ile Phe Lys Pro Leu Thr His	
268 273 278 283	
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Ser Leu Ser Asp Lys Ser His Ala His Pro Gly Cys Leu Lys Glu Pro	
284 289 294 299	
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His His Pro Ala Gln Thr Gly His Val Ser His Ser Ser Gln Lys Gln	
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tgt cat aag cct cag caa cag gcc cca gca atg aaa acc aat agt cac	1249
Cys His Lys Pro Gln Gln Gln Ala Pro Ala Met Lys Thr Asn Ser His	
316 321 326 331	
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Val Lys Glu Glu Leu Glu His Pro Gly Val Glu His Phe Lys Glu Glu	
332 337 342 347	
gat aaa ctg aaa ctg aaa aaa cct gag aag aac cta caa ccc cgc caa	1345
Asp Lys Leu Lys Leu Lys Lys Pro Glu Lys Asn Leu Gln Pro Arg Gln	
348 353 358 363	
aga aga agc agc aaa agt ttt tct tta gat gag cca cca ttg ttc att	1393
Arg Arg Ser Ser Lys Ser Phe Ser Leu Asp Glu Pro Pro Leu Phe Ile	
364 369 374 379	
cca gat aac ata gct acc ata aga aga gaa ggc tct gat cat agc tcc	1441
Pro Asp Asn Ile Ala Thr Ile Arg Arg Glu Gly Ser Asp His Ser Ser	
380 385 390 395	
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Ser Phe Glu Ser Lys Tyr Met Trp Thr Pro Ser Lys Gln Cys Gly Phe	
396 401 406 411	
tgc aaa aaa cca cat ggc aac agg ttt atg gtt ggc tgt ggg aga tgt	1537
Cys Lys Lys Pro His Gly Asn Arg Phe Met Val Gly Cys Gly Arg Cys	
412 417 422 427	
gat gac tgg ttt cat ggt gat tgt gtt ggg tta agt ctt tct caa gca	1585
Asp Asp Trp Phe His Gly Asp Cys Val Gly Leu Ser Leu Ser Gln Ala	
428 433 438 443	
cag cag atg ggc gag gaa gac aaa gaa tat gtc tgt gta aaa tgt tgt	1633
Gln Gln Met Gly Glu Glu Asp Lys Glu Tyr Val Cys Val Lys Cys Cys	
444 449 454 459	

gct gaa gaa gac aaa aag act gaa ata cta gat cca gat act ttg gaa	1681
Ala Glu Glu Asp Lys Lys Thr Glu Ile Leu Asp Pro Asp Thr Leu Glu	
460 465 470 475	
aac caa gct aca gtt gaa ttc cat agt gga gat aaa aca atg gag tgt	1729
Asn Gln Ala Thr Val Glu Phe His Ser Gly Asp Lys Thr Met Glu Cys	
476 481 486 491	
gaa aag ctt gga tta tca aaa cac aca aca aat gat aga acc aaa tat	1777
Glu Lys Leu Gly Leu Ser Lys His Thr Thr Asn Asp Arg Thr Lys Tyr	
492 497 502 507	
ata gat gat aca gtg aag cac aag gtc aaa att tta aaa cgg gag tct	1825
Ile Asp Asp Thr Val Lys His Lys Val Lys Ile Leu Lys Arg Glu Ser	
508 513 518 523	
ggt gaa ggc aga aat tca tca gac tgt aga gat aat gaa att aaa aaa	1873
Gly Glu Gly Arg Asn Ser Ser Asp Cys Arg Asp Asn Glu Ile Lys Lys	
524 529 534 539	
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Trp Gln Leu Ala Pro Leu Arg Lys Met Gly Gln Pro Val Leu Pro Arg	
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Arg Ser Ser Glu Glu Lys Ser Glu Lys Ile Pro Lys Glu Ser Thr Thr	
556 561 566 571	
gtt act tgc aca gga gaa aaa gct tca aaa cca ggt act cat gag aag	2017
Val Thr Cys Thr Gly Glu Lys Ala Ser Lys Pro Gly Thr His Glu Lys	
572 577 582 587	
caa gag atg aaa aag aag aaa gtt gaa aaa gga gtg ctt aat gta cat	2065
Gln Glu Met Lys Lys Lys Lys Val Glu Lys Gly Val Leu Asn Val His	
588 593 598 603	
cct gct gct tct gct tcc aag cct tct gca gat cag atc agg caa agt	2113
Pro Ala Ala Ser Ala Ser Lys Pro Ser Ala Asp Gln Ile Arg Gln Ser	
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Val Arg His Ser Leu Lys Asp Ile Leu Met Lys Arg Leu Thr Asp Ser	
620 625 630 635	
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Asn Leu Lys Val Pro Glu Glu Lys Ala Ala Lys Val Ala Thr Lys Ile	
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Glu Lys Glu Leu Phe Ser Phe Phe Arg Asp Thr Asp Ala Lys Tyr Lys	
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aac aaa tat aga agt ttg atg ttt aat ttg aaa gat cct aaa aac aat	2305
Asn Lys Tyr Arg Ser Leu Met Phe Asn Leu Lys Asp Pro Lys Asn Asn	
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ata tta ttt aaa aaa gta ctg aaa gga gaa gta act cct gat cat ctt	2353

Ile	Leu	Phe	Lys	Lys	Val	Leu	Lys	Gly	Glu	Val	Thr	Pro	Asp	His	Leu	
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atc	aga	atg	agt	cca	gaa	gaa	cta	gct	tct	aaa	gag	tta	gct	gct	tg	2401
Ile	Arg	Met	Ser	Pro	Glu	Glu	Leu	Ala	Ser	Lys	Glu	Leu	Ala	Ala	Trp	
700					705					710					715	
aga	cga	aga	gaa	aac	aga	cat	acc	ata	gaa	atg	att	gag	aaa	gag	cag	2449
Arg	Arg	Arg	Glu	Asn	Arg	His	Thr	Ile	Glu	Met	Ile	Glu	Lys	Glu	Gln	
716					721					726					731	
aga	gaa	gtg	gaa	cga	cgg	cca	atc	acc	aaa	ata	act	cat	aaa	ggt	gaa	2497
Arg	Glu	Val	Glu	Arg	Arg	Pro	Ile	Thr	Lys	Ile	Thr	His	Lys	Gly	Glu	
732					737					742					747	
ata	gaa	att	gag	agt	gat	gcc	cca	atg	aaa	gaa	cag	gaa	gca	gcc	atg	2545
Ile	Glu	Ile	Glu	Ser	Asp	Ala	Pro	Met	Lys	Glu	Gln	Glu	Ala	Ala	Met	
748					753					758					763	
gag	att	cag	gaa	cca	gcc	gcc	aat	aag	tca	ttg	gag	aag	cca	gaa	gga	2593
Glu	Ile	Gln	Glu	Pro	Ala	Ala	Asn	Lys	Ser	Leu	Glu	Lys	Pro	Glu	Gly	
764					769					774					779	
tct	gaa	aaa	caa	aaa	gag	gag	gtt	gac	tct	atg	tct	aaa	gat	acc	act	2641
Ser	Glu	Lys	Gln	Lys	Glu	Glu	Val	Asp	Ser	Met	Ser	Lys	Asp	Thr	Thr	
780					785					790					795	
agt	caa	cac	aga	cag	cat	ctt	ttt	gat	ctc	aac	tgc	aaa	atc	tgc	ata	2689
Ser	Gln	His	Arg	Gln	His	Leu	Phe	Asp	Leu	Asn	Cys	Lys	Ile	Cys	Ile	
796					801					806					811	
ggt	cga	atg	gca	cca	cct	gta	gat	gat	ctt	tct	cca	aaa	aaa	gta	aaa	2737
Gly	Arg	Met	Ala	Pro	Pro	Val	Asp	Asp	Leu	Ser	Pro	Lys	Lys	Val	Lys	
812					817					822					827	
gtt	gtt	gta	gga	gta	gct	cgc	aaa	cat	tca	gac	aat	gaa	gca	gaa	agt	2785
Val	Val	Val	Gly	Val	Ala	Arg	Lys	His	Ser	Asp	Asn	Glu	Ala	Glu	Ser	
828					833					838					843	
ata	gca	gat	gca	tta	tct	tca	acc	tca	aat	att	ttg	gct	tct	gaa	ttc	2833
Ile	Ala	Asp	Ala	Leu	Ser	Ser	Thr	Ser	Asn	Ile	Leu	Ala	Ser	Glu	Phe	
844					849					854					859	
ttt	gag	gag	gag	aaa	cag	gag	tct	cca	aag	tca	acg	ttc	tct	cct	gct	2881
Phe	Glu	Glu	Glu	Lys	Gln	Glu	Ser	Pro	Lys	Ser	Thr	Phe	Ser	Pro	Ala	
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cca	cgt	cca	gag	atg	cct	gga	act	gtt	gaa	gtt	gag	tct	acc	ttt	ctg	2929
Pro	Arg	Pro	Glu	Met	Pro	Gly	Thr	Val	Glu	Val	Glu	Ser	Thr	Phe	Leu	
876					881					886					891	
gct	cga	ttg	aac	ttc	atc	tg	aaa	ggt	ttt	atc	aac	atg	cct	tct	gtg	2977
Ala	Arg	Leu	Asn	Phe	Ile	Trp	Lys	Gly	Phe	Ile	Asn	Met	Pro	Ser	Val	
892					897					902					907	
gca	aaa	ttt	gtt	acc	aaa	gcc	tat	cca	gta	tct	ggc	tcc	cca	gaa	tac	3025
Ala	Lys	Phe	Val	Thr	Lys	Ala	Tyr	Pro	Val	Ser	Gly	Ser	Pro	Glu	Tyr	

908	913	918	923	
ctg aca gag gac cta cca gat agt att caa gta ggt ggc agg ata tca				3073
Leu Thr Glu Asp Leu Pro Asp Ser Ile Gln Val Gly Gly Arg Ile Ser				
924	929	934	939	
cct cag aca gtt tgg gat tat gtg gaa aaa ata aaa gca tca gga acc				3121
Pro Gln Thr Val Trp Asp Tyr Val Glu Lys Ile Lys Ala Ser Gly Thr				
940	945	950	955	
aag gaa att tgt gtg gtt cgc ttc aca cca gta act gaa gaa gat caa				3169
Lys Glu Ile Cys Val Val Arg Phe Thr Pro Val Thr Glu Glu Asp Gln				
956	961	966	971	
att tct tat act ttg ctc ttt gca tac ttc agt agc aga aag cgc tat				3217
Ile Ser Tyr Thr Leu Leu Phe Ala Tyr Phe Ser Ser Arg Lys Arg Tyr				
972	977	982	987	
gga gta gct gct aac aac atg aag cag gtt aaa gat atg tac ctt att				3265
Gly Val Ala Ala Asn Asn Met Lys Gln Val Lys Asp Met Tyr Leu Ile				
988	993	998	1003	
cct ttg ggt gcc aca gat aaa att cca cac cct ctt gtg cct ttt gat				3313
Pro Leu Gly Ala Thr Asp Lys Ile Pro His Pro Leu Val Pro Phe Asp				
1004	1009	1014	1019	
gga cct ggg ctt gaa ctg cat aga cct aat cta ttg ttg ggc tta att				3361
Gly Pro Gly Leu Glu Leu His Arg Pro Asn Leu Leu Leu Gly Leu Ile				
1020	1025	1030	1035	
att cgt cag aaa ctg aag cga cag cac agt gcc tgt gct agt act agt				3409
Ile Arg Gln Lys Leu Lys Arg Gln His Ser Ala Cys Ala Ser Thr Ser				
1036	1041	1046	1051	
cat ata gct gag act cct gaa agt gca cca cca ata gca ttg cca cct				3457
His Ile Ala Glu Thr Pro Glu Ser Ala Pro Pro Ile Ala Leu Pro Pro				
1052	1057	1062	1067	
gat aaa aaa agt aaa ata gaa gtt tct aca gaa gaa gca cca gag gaa				3505
Asp Lys Lys Ser Lys Ile Glu Val Ser Thr Glu Glu Ala Pro Glu Glu				
1068	1073	1078	1083	
gaa aat gac ttt ttt aat tct ttt aca act gta tta cac aag cag aga				3553
Glu Asn Asp Phe Phe Asn Ser Phe Thr Thr Val Leu His Lys Gln Arg				
1084	1089	1094	1099	
aat aaa cct cag cag aat ctt cag gaa gac ctt cca aca gca gtt gaa				3601
Asn Lys Pro Gln Gln Asn Leu Gln Glu Asp Leu Pro Thr Ala Val Glu				
1100	1105	1110	1115	
cct tta atg gaa gtc acc aaa cag gag cca cca aaa cct tta aga ttt				3649
Pro Leu Met Glu Val Thr Lys Gln Glu Pro Pro Lys Pro Leu Arg Phe				
1116	1121	1126	1131	
ctt cct ggc gtg ttg att ggc tgg gag aat caa cct act act ctg gaa				3697
Leu Pro Gly Val Leu Ile Gly Trp Glu Asn Gln Pro Thr Thr Leu Glu				
1132	1137	1142	1147	

tta gca aat aaa cct ctt cct gtg gat gat ata ctt caa agc ctt ttg	3745
Leu Ala Asn Lys Pro Leu Pro Val Asp Asp Ile Leu Gln Ser Leu Leu	
1148 1153 1158 1163	
ggc acc act ggt caa gta tat gac cag gcc cag tca gtg atg gaa caa	3793
Gly Thr Thr Gly Gln Val Tyr Asp Gln Ala Gln Ser Val Met Glu Gln	
1164 1169 1174 1179	
aac act gtt aaa gaa att cca ttt tta aat gag cag acc aac tca aaa	3841
Asn Thr Val Lys Glu Ile Pro Phe Leu Asn Glu Gln Thr Asn Ser Lys	
1180 1185 1190 1195	
ata gag aaa aca gat aat gtg gaa gta act gat ggt gaa aac aag gag	3889
Ile Glu Lys Thr Asp Asn Val Glu Val Thr Asp Gly Glu Asn Lys Glu	
1196 1201 1206 1211	
ata aaa gtt aaa gta gat aat att tca gaa tct aca gat aag tca gca	3937
Ile Lys Val Lys Val Asp Asn Ile Ser Glu Ser Thr Asp Lys Ser Ala	
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Glu Ile Glu Thr Ser Val Val Gly Ser Ser Ser Ile Ser Ala Gly Ser	
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Leu Thr Ser Leu Ser Leu Arg Gly Lys Pro Pro Asp Val Ser Thr Glu	
1244 1249 1254 1259	
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Ala Phe Leu Thr Asn Leu Ser Ile Gln Ser Lys Gln Glu Glu Thr Val	
1260 1265 1270 1275	
gag agt aaa gag aaa aca tta aaa aga cag ctt cag gaa gat caa gag	4129
Glu Ser Lys Glu Lys Thr Leu Lys Arg Gln Leu Gln Glu Asp Gln Glu	
1276 1281 1286 1291	
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Asn Asn Leu Gln Asp Asn Gln Thr Ser Asn Ser Ser Pro Cys Arg Ser	
1292 1297 1302 1307	
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Asn Val Gly Lys Gly Asn Ile Asp Gly Asn Val Ser Cys Ser Glu Asn	
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ctt gtt gct aat aca gcg agg tct cca cag ttt atc aac ctg aaa agg	4273
Leu Val Ala Asn Thr Ala Arg Ser Pro Gln Phe Ile Asn Leu Lys Arg	
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gat cct agg caa gca gca gga cga agt cag cct gta act act tca gaa	4321
Asp Pro Arg Gln Ala Ala Gly Arg Ser Gln Pro Val Thr Thr Ser Glu	
1340 1345 1350 1355	
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Ser Lys Asp Gly Asp Ser Cys Arg Asn Gly Glu Lys His Met Leu Pro	
1356 1361 1366 1371	

ggc ctg tca cac aac aag gag cac tta aca gaa caa atc aat gta gag	4417
Gly Leu Ser His Asn Lys Glu His Leu Thr Glu Gln Ile Asn Val Glu	
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Asn Leu Lys Val Ala Gln Asn Ser Pro Ser Val Glu Asn Ile Gln Thr	
1404 1409 1414 1419	
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Ser Gln Ala Glu Gln Ala Lys Pro Leu Gln Glu Asp Ile Leu Met Gln	
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Asn Ile Glu Thr Val His Pro Phe Arg Arg Gly Ser Ala Val Ala Thr	
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Ser His Phe Glu Val Gly Asn Thr Cys Pro Ser Glu Phe Pro Ser Lys	
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Ser Ile Thr Phe Thr Ser Arg Ser Thr Ser Pro Arg Thr Ser Thr Asn	
1468 1473 1478 1483	
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Phe Ser Pro Met Arg Pro Gln Gln Pro Asn Leu Gln His Leu Lys Ser	
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Ser Pro Pro Gly Phe Pro Phe Pro Gly Pro Pro Asn Phe Pro Pro Gln	
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Ser Met Phe Gly Phe Pro Pro His Leu Pro Pro Pro Leu Leu Pro Pro	
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Pro Gly Phe Gly Phe Ala Gln Asn Pro Met Val Pro Trp Pro Pro Val	
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Val His Leu Pro Gly Gln Pro Gln Arg Met Met Gly Pro Leu Ser Gln	
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Arg Arg Pro Glu Arg Arg His Ser Asp Pro Trp Gly Arg Gln Asp Gln	
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Gln Gln Leu Asp Arg Pro Phe Asn Arg Gly Lys Gly Asp Arg Gln Arg	
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Phe Tyr Ser Asp Ser His His Leu Lys Arg Glu Arg His Glu Lys Glu	
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Trp Glu Gln Glu Ser Glu Arg His Arg Arg Arg Asp Arg Ser Gln Asp	
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Lys Asp Arg Asp Arg Lys Ser Arg Glu Glu Gly His Lys Asp Lys Glu	
1644 1649 1654 1659	
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Arg Ala Arg Leu Ser His Gly Asp Arg Gly Thr Asp Gly Lys Ala Ser	
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Arg Asp Ser Arg Asn Val Asp Lys Lys Pro Asp Lys Pro Lys Ser Glu	
1676 1681 1686 1691	
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Asp Tyr Glu Lys Asp Lys Glu Arg Glu Lys Ser Lys His Arg Glu Gly	
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Glu Lys Asp Arg Asp Arg Tyr His Lys Asp Arg Asp His Thr Asp Arg	
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Thr Lys Ser Lys Arg *	
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Cys Arg Leu Leu Leu Leu Thr Leu Ala Ile Leu Ile Phe Ala Ser Asp  
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Ala Cys Lys Asn Val Thr Leu His Val Pro Ser Lys Leu Asp Ala Glu  
31 36 41 46  
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Lys Leu Val Gly Arg Val Asn Leu Lys Glu Cys Phe Thr Ala Ala Asn  
47 52 57 62  
cta att cat tca agt gat cct gac ttc caa att ttg gag gat ggt tca 779

Leu Ile His Ser Ser Asp Pro Asp Phe Gln Ile Leu Glu Asp Gly Ser	
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gtc tat aca aca aat act att cta ttg tcc tcg gag aag aga agt ttt	827
Val Tyr Thr Thr Asn Thr Ile Leu Leu Ser Ser Glu Lys Arg Ser Phe	
79 84 89 94	
acc ata tta ctt tcc aac act gag aac caa gaa aag aag aaa ata ttt	875
Thr Ile Leu Leu Ser Asn Thr Glu Asn Gln Glu Lys Lys Lys Ile Phe	
95 100 105 110	
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Val Phe Leu Glu His Gln Thr Lys Val Leu Lys Lys Arg His Thr Lys	
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gaa aaa gtt cta agg cgc gcc aag aga aga tgg gct cca att cct tgt	971
Glu Lys Val Leu Arg Arg Ala Lys Arg Arg Trp Ala Pro Ile Pro Cys	
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Ser Met Leu Glu Asn Ser Leu Gly Pro Phe Pro Leu Phe Leu Gln Gln	
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Val Gln Ser Asp Thr Ala Gln Asn Tyr Thr Ile Tyr Tyr Ser Ile Arg	
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Pro Glu Leu Pro Leu Pro Leu Ile Ile Lys Ile Glu Asp Glu Asn Asp	
223 228 233 238	
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Asp Glu Pro Asp Thr Met His Thr Arg Leu Lys Tyr Ser Ile Ile Gly	
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Gln Val Pro Pro Ser Pro Thr Leu Phe Ser Met His Pro Thr Thr Gly	

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Val Ile Thr Thr Thr Ser Ser Gln Leu Asp Arg Glu Leu Ile Asp Lys				
303	308	313	318	
tac cag ttg aaa ata aaa gta caa gac atg gat ggt cag tat ttt ggt				1547
Tyr Gln Leu Lys Ile Lys Val Gln Asp Met Asp Gly Gln Tyr Phe Gly				
319	324	329	334	
cta cag aca act tca act tgt atc att aac att gat gat gta aat gac				1595
Leu Gln Thr Thr Ser Thr Cys Ile Ile Asn Ile Asp Asp Val Asn Asp				
335	340	345	350	
cac ttg cca aca ttt act cgt act tct tat gtg aca tca gtg gaa gaa				1643
His Leu Pro Thr Phe Thr Arg Thr Ser Tyr Val Thr Ser Val Glu Glu				
351	356	361	366	
aat aca gtt gat gtg gaa atc tta cga gtt act gtt gag gat aag gac				1691
Asn Thr Val Asp Val Glu Ile Leu Arg Val Thr Val Glu Asp Lys Asp				
367	372	377	382	
tta gtg aat act gct aac tgg aga gct aat tat acc att tta aag ggc				1739
Leu Val Asn Thr Ala Asn Trp Arg Ala Asn Tyr Thr Ile Leu Lys Gly				
383	388	393	398	
aat gaa aat ggc aat ttt aaa att gta aca gat gcc aaa acc aat gaa				1787
Asn Glu Asn Gly Asn Phe Lys Ile Val Thr Asp Ala Lys Thr Asn Glu				
399	404	409	414	
gga gtt ctt tgt gta gtt aag cct ttg aat tat gaa gaa aag caa cag				1835
Gly Val Leu Cys Val Val Lys Pro Leu Asn Tyr Glu Glu Lys Gln Gln				
415	420	425	430	
atg atc ttg caa att ggt gta gtt aat gaa gct cca ttt tcc aga gag				1883
Met Ile Leu Gln Ile Gly Val Val Asn Glu Ala Pro Phe Ser Arg Glu				
431	436	441	446	
gct agt cca aga tca gcc atg agc aca gca aca gtt act gtt aat gta				1931
Ala Ser Pro Arg Ser Ala Met Ser Thr Ala Thr Val Thr Val Asn Val				
447	452	457	462	
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Glu Asp Gln Asp Glu Gly Pro Glu Cys Asn Pro Pro Ile Gln Thr Val				
463	468	473	478	
cgc atg aaa gaa aat gca gaa gtg gga aca aca agc aat gga tat aaa				2027
Arg Met Lys Glu Asn Ala Glu Val Gly Thr Thr Ser Asn Gly Tyr Lys				
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gca tat gac cca gaa aca aga agt agc agt ggc ata agg tat aag aaa				2075
Ala Tyr Asp Pro Glu Thr Arg Ser Ser Ser Gly Ile Arg Tyr Lys Lys				
495	500	505	510	
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Leu Thr Asp Pro Thr Gly Trp Val Thr Ile Asp Glu Asn Thr Gly Ser				
511	516	521	526	

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Ile Lys Val Phe Arg Ser Leu Asp Arg Glu Ala Glu Thr Ile Lys Asn	
527 532 537 542	
ggc ata tat aat att aca gtc ctt gca tca gac caa gga ggg aga aca	2219
Gly Ile Tyr Asn Ile Thr Val Leu Ala Ser Asp Gln Gly Gly Arg Thr	
543 548 553 558	
tgt acg ggg aca ctg ggc att ata ctt caa gac gtg aat gat aac agc	2267
Cys Thr Gly Thr Leu Gly Ile Ile Leu Gln Asp Val Asn Asp Asn Ser	
559 564 569 574	
cca ttc ata cct aaa aag aca gtg atc atc tgc aaa ccc acc atg tca	2315
Pro Phe Ile Pro Lys Lys Thr Val Ile Ile Cys Lys Pro Thr Met Ser	
575 580 585 590	
tct gcg gag att gtt gcg gtt gat cct gat gag cct atc cat ggc cca	2363
Ser Ala Glu Ile Val Ala Val Asp Pro Asp Glu Pro Ile His Gly Pro	
591 596 601 606	
ccc ttt gac ttt agt ctg gag agt tct act tca gaa gta cag aga atg	2411
Pro Phe Asp Phe Ser Leu Glu Ser Ser Thr Ser Glu Val Gln Arg Met	
607 612 617 622	
tgg aga ctg aaa gca att aat gat aca gca gca cgt ctt tcc tat cag	2459
Trp Arg Leu Lys Ala Ile Asn Asp Thr Ala Ala Arg Leu Ser Tyr Gln	
623 628 633 638	
aat gat cct cca ttt ggc tca tat gta gta cct ata aca gtg aga gat	2507
Asn Asp Pro Pro Phe Gly Ser Tyr Val Val Pro Ile Thr Val Arg Asp	
639 644 649 654	
aga ctt ggc atg tct agt gtc act tca ttg gat gtt aca ctg tgt gac	2555
Arg Leu Gly Met Ser Ser Val Thr Ser Leu Asp Val Thr Leu Cys Asp	
655 660 665 670	
tgc att acc gaa aat gac tgc aca cat cgt gta gat cca agg att ggc	2603
Cys Ile Thr Glu Asn Asp Cys Thr His Arg Val Asp Pro Arg Ile Gly	
671 676 681 686	
ggg gga gga gta caa ctt gga aag tgg gcc atc ctt gca ata ttg ttg	2651
Gly Gly Gly Val Gln Leu Gly Lys Trp Ala Ile Leu Ala Ile Leu Leu	
687 692 697 702	
ggc ata gca ttg ctc ttt tgc atc ctg ttt acg ctg gtc tgt ggg gct	2699
Gly Ile Ala Leu Leu Phe Cys Ile Leu Phe Thr Leu Val Cys Gly Ala	
703 708 713 718	
tct ggg acg tct aaa caa cca aaa gta att cct gat gat tta gcc cag	2747
Ser Gly Thr Ser Lys Gln Pro Lys Val Ile Pro Asp Asp Leu Ala Gln	
719 724 729 734	
cag aac cta att gta tca aac aca gaa gct cct gga gat gac aaa gtg	2795
Gln Asn Leu Ile Val Ser Asn Thr Glu Ala Pro Gly Asp Asp Lys Val	
735 740 745 750	

tat tct gcg aat ggc ttc aca acc caa act gtg ggc gct tct gct cag	2843
Tyr Ser Ala Asn Gly Phe Thr Thr Gln Thr Val Gly Ala Ser Ala Gln	
751 756 761 766	
gga gtt tgt ggc acc gtg gga tca gga atc aaa aac gga ggt cag gag	2891
Gly Val Cys Gly Thr Val Gly Ser Gly Ile Lys Asn Gly Gly Gln Glu	
767 772 777 782	
acc atc gaa atg gtg aaa gga gga cac cag acc tcg gaa tcc tgc cgg	2939
Thr Ile Glu Met Val Lys Gly Gly His Gln Thr Ser Glu Ser Cys Arg	
783 788 793 798	
ggg gct ggc cac cat cac acc ctg gac tcc tgc agg gga gga cac acg	2987
Gly Ala Gly His His His Thr Leu Asp Ser Cys Arg Gly Gly His Thr	
799 804 809 814	
gag gtg gac aac tgc aga tac act tac tcg gag tgg cac agt ttt act	3035
Glu Val Asp Asn Cys Arg Tyr Thr Tyr Ser Glu Trp His Ser Phe Thr	
815 820 825 830	
cag ccc cgt ctt ggt gaa gaa tcc att aga gga cac act ctg att aaa	3083
Gln Pro Arg Leu Gly Glu Glu Ser Ile Arg Gly His Thr Leu Ile Lys	
831 836 841 846	
aat taa acaatgaaag aaagtgtatc tgtgtaatca agatgaaaat cacaagcatg	3139
Asn *	
847	
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gttgttgacag tgaacgacaa gaagaagatg ggcttgaatt tttggataat ttggagccca	3259
aatttaggac actagcagaa gcatgcatga agagatgagt gtgttctaata aagtctctga	3319
aagccagtgg ctttatgact tttaaaaaaa attacaaacc aagaatTTTT taaagcagaa	3379
gatgctatTT gtggggggtt ttctctcatt atttggatgg aatctctttg gtcaaagca	3439
catttacaga gagacactat aaacaagtac acaaattttt caatttttac atatttttaa	3499
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aaagtgtgta gactgcattc ttgctattat tttattgttg taatgtgacc ttttcaactg	3799
gcaaagggag atttctagcc aggcattgac tattacaatt tcatttttggg ggagtttagt	3859
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ttgccagtga aatttaagtt ttaaaataact ttcagaatgt atttttacta ctgcaagttt	3979
ttgggtcttta aaatgtcaag tagcatctct ctctttctct ctgtctcttt ctgtttctct	4039

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<212> DNA  
<213> Homo sapiens

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<222> (107)..(1558)

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Met Gly Ser  
1  
cgc cac ttc gag ggg att tat gac cac gtg ggg cac ttc ggc aga ttc 163  
Arg His Phe Glu Gly Ile Tyr Asp His Val Gly His Phe Gly Arg Phe  
4 9 14 19  
cag aga gtc ctc tat ttc ata tgt gcc ttc cag aac atc tct tgt ggt 211  
Gln Arg Val Leu Tyr Phe Ile Cys Ala Phe Gln Asn Ile Ser Cys Gly  
20 25 30 35  
att cac tac ttg gct tct gtg ttc atg gga gtc acc cct cat cat gtc 259  
Ile His Tyr Leu Ala Ser Val Phe Met Gly Val Thr Pro His His Val  
36 41 46 51  
tgc agg ccc cca ggc aat tgt cat ctg gac tca ttg tgg gac ttg ggg 307  
Cys Arg Pro Pro Gly Asn Cys His Leu Asp Ser Leu Trp Asp Leu Gly  
52 57 62 67  
att aga gga cct gag aca aag atg ctg ctg ccc tac tgc ttg cta acg 355  
Ile Arg Gly Pro Glu Thr Lys Met Leu Leu Pro Tyr Cys Leu Leu Thr  
68 73 78 83  
aag cta gga cgc cgg gtg gtc ttg tgg gcc aca agc agt agc atg ttt 403  
Lys Leu Gly Arg Arg Val Val Leu Trp Ala Thr Ser Ser Ser Met Phe  
84 89 94 99  
ttg ttt gga ata gca gcg gcg ttt gca gtt gat tat tac acc ttc atg 451  
Leu Phe Gly Ile Ala Ala Ala Phe Ala Val Asp Tyr Tyr Thr Phe Met  
100 105 110 115  
gct gct cgc ttt ttt ctt gcc atg gtt gca agt ggc tat ctt gtg gtg 499  
Ala Ala Arg Phe Phe Leu Ala Met Val Ala Ser Gly Tyr Leu Val Val  
116 121 126 131  
ggg ttt gtc tat gtg atg gaa ttc att ggc atg aag tct cgg aca tgg 547

Gly Phe Val Tyr Val Met Glu Phe Ile Gly Met Lys Ser Arg Thr Trp	
132 137 142 147	
gcg tct gtc cat ttg cat tcc ttt ttt gca gtt gga acc ctg ctg gtg	595
Ala Ser Val His Leu His Ser Phe Phe Ala Val Gly Thr Leu Leu Val	
148 153 158 163	
gct ttg aca gga tac ttg gtc agg acc tgg tgg ctt tac cag atg atc	643
Ala Leu Thr Gly Tyr Leu Val Arg Thr Trp Trp Leu Tyr Gln Met Ile	
164 169 174 179	
ctc tcc aca gtg act gtc ccc ttt atc ctg tgc tgt tgg gtg ctc cca	691
Leu Ser Thr Val Thr Val Pro Phe Ile Leu Cys Cys Trp Val Leu Pro	
180 185 190 195	
gag aca cct ttt tgg ctt ctc tca gag gga cga tat gaa gaa gca caa	739
Glu Thr Pro Phe Trp Leu Leu Ser Glu Gly Arg Tyr Glu Glu Ala Gln	
196 201 206 211	
aaa ata gtt gac atc atg gcc aag tgg aac agg gca agc tcc tgt aaa	787
Lys Ile Val Asp Ile Met Ala Lys Trp Asn Arg Ala Ser Ser Cys Lys	
212 217 222 227	
ctg tca gaa ctt tta tca ctg gac cta caa ggt cct gtt agt aat agc	835
Leu Ser Glu Leu Leu Ser Leu Asp Leu Gln Gly Pro Val Ser Asn Ser	
228 233 238 243	
ccc act gaa gtt cag aag cac aac cta tca tat ctg ttt tat aac tgg	883
Pro Thr Glu Val Gln Lys His Asn Leu Ser Tyr Leu Phe Tyr Asn Trp	
244 249 254 259	
agc att acg aaa agg aca ctt acc gtt tgg cta atc tgg ttc act gga	931
Ser Ile Thr Lys Arg Thr Leu Thr Val Trp Leu Ile Trp Phe Thr Gly	
260 265 270 275	
agt ttg gga ttc tac tgc ttt tcc ttg aat tct gtt aac tta gga ggc	979
Ser Leu Gly Phe Tyr Ser Phe Ser Leu Asn Ser Val Asn Leu Gly Gly	
276 281 286 291	
aat gaa tac tta aac ctc ttc ctc ctg ggt gta gtg gaa att ccc gcc	1027
Asn Glu Tyr Leu Asn Leu Phe Leu Leu Gly Val Val Glu Ile Pro Ala	
292 297 302 307	
tac acc ttc gtg tgc atc gcc atg gac aag gtc ggg agg aga aca gtc	1075
Tyr Thr Phe Val Cys Ile Ala Met Asp Lys Val Gly Arg Arg Thr Val	
308 313 318 323	
ctg gcc tac tct ctt ttc tgc agt gca ctg gcc tgt ggt gtc gtt atg	1123
Leu Ala Tyr Ser Leu Phe Cys Ser Ala Leu Ala Cys Gly Val Val Met	
324 329 334 339	
gtg atc ccc cag aaa cat tat att ttg ggt gtg gtg aca gct atg gtt	1171
Val Ile Pro Gln Lys His Tyr Ile Leu Gly Val Val Thr Ala Met Val	
340 345 350 355	
gga aaa ttt gcc atc ggg gca gca ttt ggc ctc att tat ctt tat aca	1219
Gly Lys Phe Ala Ile Gly Ala Ala Phe Gly Leu Ile Tyr Leu Tyr Thr	

356	361	366	371	
gct gag ctg tat cca acc att gta aga tgc ctg gct gtg gga agc ggc				1267
Ala Glu Leu Tyr Pro Thr Ile Val Arg Ser Leu Ala Val Gly Ser Gly				
372	377	382	387	
agc atg gtg tgt cgc ctg gcc agc atc ctg gcg ccg ttc tct gtg gac				1315
Ser Met Val Cys Arg Leu Ala Ser Ile Leu Ala Pro Phe Ser Val Asp				
388	393	398	403	
ctc agc agc att tgg atc ttc ata cca cag ttg ttt gtt ggg act atg				1363
Leu Ser Ser Ile Trp Ile Phe Ile Pro Gln Leu Phe Val Gly Thr Met				
404	409	414	419	
gcc ctc ctg agt gga gtg tta aca cta aag ctt cca gaa acc ctt ggg				1411
Ala Leu Leu Ser Gly Val Leu Thr Leu Lys Leu Pro Glu Thr Leu Gly				
420	425	430	435	
aaa cgg cta gca act act tgg gag gag gct gca aaa ctg gag tca gag				1459
Lys Arg Leu Ala Thr Thr Trp Glu Glu Ala Ala Lys Leu Glu Ser Glu				
436	441	446	451	
aat gaa agc aag tca agc aaa tta ctt ctc aca act aat aat agt ggg				1507
Asn Glu Ser Lys Ser Ser Lys Leu Leu Leu Thr Thr Asn Asn Ser Gly				
452	457	462	467	
ctg gaa aaa acg gaa gcg att acc ccc agg gat tct ggt ctt ggt gaa				1555
Leu Glu Lys Thr Glu Ala Ile Thr Pro Arg Asp Ser Gly Leu Gly Glu				
468	473	478	483	
taa atgt gccatgcctg ctgtctagca cctgaaatat tatttaccct aatgcctttg				1612
*				
484				
tattagagga atcttattct catctcccat atgttgtttg tatgtctttt taataaattt				1672
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cagttttaaa aactgctttc ttattgctgc aaaatatttt tcaacatttg tttttctatg				1792
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tcgagggcca aat				1865

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 <212> DNA  
 <213> Homo sapiens

<220>  
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 <222> (411)..(812)

<400> 272





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caatttcagg ggagtcaaaa accttgcaac ttcctttctcc actaaccag gactaaaaat	1275
ggacaggctg acctcagtgt ttacaaattc agaattttga taggggtaga tatggagaaa	1335
gacctatttc ctgggtctct gctgtgtagt ctccttcagg cttattgtgc tcagtgaaca	1395
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gctttactgt gacaggtttt gcccaaggct ttgataacctg tccccagggt tatcttaaaa	1935
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agtctgtgga atcactagtg actaaatact gggaacctat tttctcaatc ttctccatg	2355
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aaaatgttta agatatatgt atataaagtg tatgctgtat tggtgcaata atggtaatta	2475
aaaatatgaa aaaaaaaaaa	2495

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 <212> DNA

<213> Homo sapiens

<220>

<221> CDS

<222> (62)..(2128)

<400> 273

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Met Ala Asp Leu Glu Ala Val Leu Ala Asp Val Ser Tyr Leu Met  
1 5 10

gcc atg gag aag agc aag gcg acc ccg gcc gcc cgc gcc agc aag agg 154  
Ala Met Glu Lys Ser Lys Ala Thr Pro Ala Ala Arg Ala Ser Lys Arg  
16 21 26 31

atc gtc ctg ccg gag ccc agt atc cgg agt gtg atg cag aag tac ctt 202  
Ile Val Leu Pro Glu Pro Ser Ile Arg Ser Val Met Gln Lys Tyr Leu  
32 37 42 47

gca gag aga aat gaa ata acc ttt gac aag att ttc aat cag aaa att 250  
Ala Glu Arg Asn Glu Ile Thr Phe Asp Lys Ile Phe Asn Gln Lys Ile  
48 53 58 63

ggc ttc ttg cta ttt aaa gat ttt tgt ttg aat gaa att aat gaa gct 298  
Gly Phe Leu Leu Phe Lys Asp Phe Cys Leu Asn Glu Ile Asn Glu Ala  
64 69 74 79

gta cct cag gtg aag ttt tat gaa gag ata aag gaa tat gaa aaa ctt 346  
Val Pro Gln Val Lys Phe Tyr Glu Glu Ile Lys Glu Tyr Glu Lys Leu  
80 85 90 95

gat aat gag gaa gac cgc ctt tgc aga agt cga caa att tat gat gcc 394  
Asp Asn Glu Glu Asp Arg Leu Cys Arg Ser Arg Gln Ile Tyr Asp Ala  
96 101 106 111

tac atc atg aag gaa ctt ctt tcc tgt tca cat cct ttc tca aag caa 442  
Tyr Ile Met Lys Glu Leu Leu Ser Cys Ser His Pro Phe Ser Lys Gln  
112 117 122 127

gct gta gaa cac gta caa agt cat tta tcc aag aaa caa gtg aca tca 490  
Ala Val Glu His Val Gln Ser His Leu Ser Lys Lys Gln Val Thr Ser  
128 133 138 143

act ctt ttt cag cca tac ata gaa gaa att tgt gaa agc ctt cga ggt 538  
Thr Leu Phe Gln Pro Tyr Ile Glu Glu Ile Cys Glu Ser Leu Arg Gly  
144 149 154 159

gac att ttt caa aaa ttt atg gaa agt gac aag ttc act aga ttt tgt 586  
Asp Ile Phe Gln Lys Phe Met Glu Ser Asp Lys Phe Thr Arg Phe Cys  
160 165 170 175

cag tgg aaa aac gtt gaa tta aat atc cat ttg acc atg aat gag ttc 634  
Gln Trp Lys Asn Val Glu Leu Asn Ile His Leu Thr Met Asn Glu Phe  
176 181 186 191

agt gtg cat agg att att gga cga gga gga ttc ggg gaa gtt tat ggt	682
Ser Val His Arg Ile Ile Gly Arg Gly Gly Phe Gly Glu Val Tyr Gly	
192 197 202 207	
tgk agg aaa gca gac act gga aaa atg tat gca atg aaa tgc tta gat	730
Cys Arg Lys Ala Asp Thr Gly Lys Met Tyr Ala Met Lys Cys Leu Asp	
208 213 218 223	
aag aag agg atc aaa atg aaa caa gga gaa aca tta gcc tta aat gaa	778
Lys Lys Arg Ile Lys Met Lys Gln Gly Glu Thr Leu Ala Leu Asn Glu	
224 229 234 239	
aga atc atg ttg tct ctt gtc agc aca gga gac tgt cct ttc att gta	826
Arg Ile Met Leu Ser Leu Val Ser Thr Gly Asp Cys Pro Phe Ile Val	
240 245 250 255	
tgt atg acc tat gcc ttc cat acc cca gat aaa ctc tgc ttc atc ctg	874
Cys Met Thr Tyr Ala Phe His Thr Pro Asp Lys Leu Cys Phe Ile Leu	
256 261 266 271	
gat ctg atg aac ggg ggc gat ttg cac tac cac ctt tca caa cac ggt	922
Asp Leu Met Asn Gly Gly Asp Leu His Tyr His Leu Ser Gln His Gly	
272 277 282 287	
gtg ttc tct gag aag gag atg cgg ttt tat gcc act gaa atc att ctg	970
Val Phe Ser Glu Lys Glu Met Arg Phe Tyr Ala Thr Glu Ile Ile Leu	
288 293 298 303	
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Gly Leu Glu His Met His Asn Arg Phe Val Val Tyr Arg Asp Leu Lys	
304 309 314 319	
cca gca aat att ctc ttg gat gaa cat gga cac gca aga ata tca gat	1066
Pro Ala Asn Ile Leu Leu Asp Glu His Gly His Ala Arg Ile Ser Asp	
320 325 330 335	
ctt ggt ctt gcc tgc gat ttt tcc aaa aag aag cct cat gcg agt gtg	1114
Leu Gly Leu Ala Cys Asp Phe Ser Lys Lys Lys Pro His Ala Ser Val	
336 341 346 351	
ggc acc cat ggg tac atg gct ccc gag gtg ctg cag aag ggg acg gcc	1162
Gly Thr His Gly Tyr Met Ala Pro Glu Val Leu Gln Lys Gly Thr Ala	
352 357 362 367	
tat gac agc agt gcc gac tgg ttc tcc ctg ggc tgc atg ctt ttc aaa	1210
Tyr Asp Ser Ser Ala Asp Trp Phe Ser Leu Gly Cys Met Leu Phe Lys	
368 373 378 383	
ctt ctg aga ggg cac agc cct ttc aga caa cat aaa acc aaa gac aag	1258
Leu Leu Arg Gly His Ser Pro Phe Arg Gln His Lys Thr Lys Asp Lys	
384 389 394 399	
cat gaa att/gac cga atg aca ctc acc gtg aat gtg gaa ctt cca gac	1306
His Glu Ile Asp Arg Met Thr Leu Thr Val Asn Val Glu Leu Pro Asp	
400 405 410 415	
acc ttc tct cct gaa ctg aag tcc ctt ttg gag ggc ttg ctt cag cga	1354

Thr Phe Ser Pro Glu Leu Lys Ser Leu Leu Glu Gly Leu Leu Gln Arg	
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Asp Val Ser Lys Arg Leu Gly Cys His Gly Gly Gly Ser Gln Glu Val	
432 437 442 447	
aaa gag cac agc ttt ttc aaa ggt gtt gac tgg cag cat gtc tac tta	1450
Lys Glu His Ser Phe Phe Lys Gly Val Asp Trp Gln His Val Tyr Leu	
448 453 458 463	
caa aag tac cca cca ccc ttg att cct ccc cgg gga gaa gtc aat gct	1498
Gln Lys Tyr Pro Pro Pro Leu Ile Pro Pro Arg Gly Glu Val Asn Ala	
464 469 474 479	
gct gat gcc ttt gat att ggc tca ttt gat gaa gag gat acc aaa ggg	1546
Ala Asp Ala Phe Asp Ile Gly Ser Phe Asp Glu Glu Asp Thr Lys Gly	
480 485 490 495	
att aag cta ctt gat tgc gac caa gaa ctc tac aag aac ttc cct ttg	1594
Ile Lys Leu Leu Asp Cys Asp Gln Glu Leu Tyr Lys Asn Phe Pro Leu	
496 501 506 511	
gtc atc tct gaa cgc tgg cag caa gaa gta acg gaa aca gtt tat gaa	1642
Val Ile Ser Glu Arg Trp Gln Gln Glu Val Thr Glu Thr Val Tyr Glu	
512 517 522 527	
gca gta aat gca gac aca gat aaa atc gag gcc agg aag aga gct aaa	1690
Ala Val Asn Ala Asp Thr Asp Lys Ile Glu Ala Arg Lys Arg Ala Lys	
528 533 538 543	
aat aag caa ctt ggc cac gaa gaa gat tac gct ctg ggg aag gac tgt	1738
Asn Lys Gln Leu Gly His Glu Glu Asp Tyr Ala Leu Gly Lys Asp Cys	
544 549 554 559	
att atg cac ggg tac atg ctg aaa ctg gga aac cca ttt ctg act cag	1786
Ile Met His Gly Tyr Met Leu Lys Leu Gly Asn Pro Phe Leu Thr Gln	
560 565 570 575	
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Trp Gln Arg Arg Tyr Phe Tyr Leu Phe Pro Asn Arg Leu Glu Trp Arg	
576 581 586 591	
gga gag gga gag tcc cgg caa aat tta ctg aca atg gaa cag att ctc	1882
Gly Glu Gly Glu Ser Arg Gln Asn Leu Leu Thr Met Glu Gln Ile Leu	
592 597 602 607	
tct gtg gaa gaa act caa att aaa gac aaa aaa tgc att ttg ttc aga	1930
Ser Val Glu Glu Thr Gln Ile Lys Asp Lys Lys Cys Ile Leu Phe Arg	
608 613 618 623	
ata aaa gga ggg aaa caa ttt gtc ttg caa tgt gag agt gat cca gag	1978
Ile Lys Gly Gly Lys Gln Phe Val Leu Gln Cys Glu Ser Asp Pro Glu	
624 629 634 639	
ttt gtg cag tgg aag aaa gag ttg aac gaa acc ttc aag gag gcc cag	2026
Phe Val Gln Trp Lys Lys Glu Leu Asn Glu Thr Phe Lys Glu Ala Gln	

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cgg cta ttg cgt cgt gcc ccg aag ttc ctc aac aaa cct cgg tca ggt				2074
Arg Leu Leu Arg Arg Ala Pro Lys Phe Leu Asn Lys Pro Arg Ser Gly				
656	661	666	671	
act gtg gag ctc cca aag cca tcc ctc tgt cac aga aac agc aac ggc				2122
Thr Val Glu Leu Pro Lys Pro Ser Leu Cys His Arg Asn Ser Asn Gly				
672	677	682	687	
ctc tag caccagaaa cagggagggt cctcgaggag gacacaccag ggtctcagcc				2178
Leu *				
688				
ttttggggtg aacgaggatg aggcattctga tctattcgct accgggactc ctccaggctc				2238
ccgagaggag tcgggaccct tcggcttggg gtcagctcag ctccctgcct tgtcacattt				2298
gtctgcatta gaaactactg aagaaataaa agttcttttt ctttgctaca aaaaaaaaaa				2358
aaaa				2362

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agccccgggaa ccgagttgcg ggagtgcggt ctgtgccgtt ccggccagga gtttgccgac	120
tgcagacgtc ctgcgaaccg gcaag atg tgc tct ctg ggg ttg ttc cct cct	172
Met Cys Ser Leu Gly Leu Phe Pro Pro	
1 5	
cca ccg cct cgg ggt caa gtc acc cta tat gag cac aat aac gag ctg	220
Pro Pro Pro Arg Gly Gln Val Thr Leu Tyr Glu His Asn Asn Glu Leu	
10 15 20 25	
gtg acg ggc agt agc tat gag agc ccg ccc ccc gac ttc cgg ggc cag	268
Val Thr Gly Ser Ser Tyr Glu Ser Pro Pro Pro Asp Phe Arg Gly Gln	
26 31 36 41	
tgg atc aat ctt cct gtc cta caa ctg aca aag gat ccc cta aag acc	316
Trp Ile Asn Leu Pro Val Leu Gln Leu Thr Lys Asp Pro Leu Lys Thr	
42 47 52 57	
cct gga agg ctg gac cat ggc aca aga act gcc ttc atc cat cac cgg	364
Pro Gly Arg Leu Asp His Gly Thr Arg Thr Ala Phe Ile His His Arg	

58	63	68	73	
gag caa gtg tgg aag aga tgc atc aac att tgg cgt gat gtg ggc ctt				412
Glu Gln Val Trp Lys Arg Cys Ile Asn Ile Trp Arg Asp Val Gly Leu				
74	79	84	89	
ttt ggg gtg cta aat gaa att gca aac tca gaa gaa gag gtg ttt gag				460
Phe Gly Val Leu Asn Glu Ile Ala Asn Ser Glu Glu Glu Val Phe Glu				
90	95	100	105	
tgg gtg aag acg gca tcc ggc tgg gcc ctg gca ctc tgt cga tgg gcc				508
Trp Val Lys Thr Ala Ser Gly Trp Ala Leu Ala Leu Cys Arg Trp Ala				
106	111	116	121	
tct tcc ctc cat ggg tcc ctg ttc ccc cat ctg tct ctc agg agc gaa				556
Ser Ser Leu His Gly Ser Leu Phe Pro His Leu Ser Leu Arg Ser Glu				
122	127	132	137	
gat ctg atc gct gaa ttt gcc caa gtc aca aat tgg tcc agc tgc tgc				604
Asp Leu Ile Ala Glu Phe Ala Gln Val Thr Asn Trp Ser Ser Cys Cys				
138	143	148	153	
ttg cgt gtc ttt gca tgg cac ccc cac acc aac aag ttt gca gtg gcc				652
Leu Arg Val Phe Ala Trp His Pro His Thr Asn Lys Phe Ala Val Ala				
154	159	164	169	
ctg cta gat gac tca gtc cgt gtg tat aat gcc agc agc acc ata gtc				700
Leu Leu Asp Asp Ser Val Arg Val Tyr Asn Ala Ser Ser Thr Ile Val				
170	175	180	185	
ccc tcc ctg aag cac cgg ctg cag cga aat gtg gcg tct ctg gcc tgg				748
Pro Ser Leu Lys His Arg Leu Gln Arg Asn Val Ala Ser Leu Ala Trp				
186	191	196	201	
aag ccc ctt agt gcc tct gtc ttg gct gtg gcc tgc cag agc tgc att				796
Lys Pro Leu Ser Ala Ser Val Leu Ala Val Ala Cys Gln Ser Cys Ile				
202	207	212	217	
ctt atc tgg acc ctg gac cct acc tcc ttg tct acc cga ccc tct tct				844
Leu Ile Trp Thr Leu Asp Pro Thr Ser Leu Ser Thr Arg Pro Ser Ser				
218	223	228	233	
ggc tgt gcc caa gtg ctg tct cac cct ggg cat aca cct gtt acc agc				892
Gly Cys Ala Gln Val Leu Ser His Pro Gly His Thr Pro Val Thr Ser				
234	239	244	249	
ttg gcc tgg gcc ccc agt ggg ggg cgg ctg ctc tca gct tca ccc gtg				940
Leu Ala Trp Ala Pro Ser Gly Gly Arg Leu Leu Ser Ala Ser Pro Val				
250	255	260	265	
gat gct gct atc cgg gta tgg gat gtc tca aca gag acc tgt gtc ccc				988
Asp Ala Ala Ile Arg Val Trp Asp Val Ser Thr Glu Thr Cys Val Pro				
266	271	276	281	
ctt ccc tgg ttt cga gga ggt ggg gtg acc aac ctg ctc tgg tcc cca				1036
Leu Pro Trp Phe Arg Gly Gly Gly Val Thr Asn Leu Leu Trp Ser Pro				
282	287	292	297	

gac ggc agc aaa atc ctg gct acc act cct tca gct gtc ttt cga gtc	1084
Asp Gly Ser Lys Ile Leu Ala Thr Thr Pro Ser Ala Val Phe Arg Val	
298 303 308 313	
tgg gag gcc cag atg tgg act tgt gag agg tgg cct act cta tca ggg	1132
Trp Glu Ala Gln Met Trp Thr Cys Glu Arg Trp Pro Thr Leu Ser Gly	
314 319 324 329	
cgc tgt cag act ggc tgc tgg agc cca gat ggc agc cga ctg ctg ttc	1180
Arg Cys Gln Thr Gly Cys Trp Ser Pro Asp Gly Ser Arg Leu Leu Phe	
330 335 340 345	
act gta ttg gga gag cca ctg att tac tcc ctg tct ttt cca gaa cgt	1228
Thr Val Leu Gly Glu Pro Leu Ile Tyr Ser Leu Ser Phe Pro Glu Arg	
346 351 356 361	
tgt ggt gag gga aag ggt gcg ttg gag gtg caa agt cag caa cga ttg	1276
Cys Gly Glu Gly Lys Gly Ala Leu Glu Val Gln Ser Gln Gln Arg Leu	
362 367 372 377	
tgg cag atc tgt ctg aga caa caa tac aga cac cag atg gtg agg aga	1324
Trp Gln Ile Cys Leu Arg Gln Gln Tyr Arg His Gln Met Val Arg Arg	
378 383 388 393	
ggc ttg ggg gag agg ctc act cca tgg tct ggg acc cca gtg ggg aac	1372
Gly Leu Gly Glu Arg Leu Thr Pro Trp Ser Gly Thr Pro Val Gly Asn	
394 399 404 409	
gtc tgg ctg tgc tta tga aaggaa agccaagggt acaggatggt aaaccagtca	1426
Val Trp Leu Cys Leu *	
410 415	
tcctcctttt tcgcactcga aacagccctg tgtttgagct ccttcctgt ggcattatcc	1486
agggggagcc aggagcccag cccagctca tcactttcca tccttccttc aacaaagggg	1546
ccctgctcag tgtgggctgg tccacaggcc gaattgccca catcccgctg tactttgtca	1606
atgcccagtt tccacgtttt agcccagtgc ttgggcgggc ccaggaaccc cctgctgggg	1666
gtggaggctc tattcatgac ctgcccctct ttactgagac atccccaacc tctgcccctt	1726
gggaccctct cccagggccca ccacctgttc tgcccactc cccacattcc cacctctaag	1786
aataaataag ttttcctttt gttttccact caaaaaaaaaaaa aaa	1829

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 <211> 1708  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> CDS



<222> (36)..(1571)

<400> 275

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1

aag gct gct gcg ctg aac ctc tcg gct ctc cac agc ccc gcg cac agg 101  
Lys Ala Ala Ala Leu Asn Leu Ser Ala Leu His Ser Pro Ala His Arg  
7 12 17 22

cct ccg ggt ttc agt gta gct cag aag cca ttt gga gcc acg tat gta 149  
Pro Pro Gly Phe Ser Val Ala Gln Lys Pro Phe Gly Ala Thr Tyr Val  
23 28 33 38

tgg agc agc atc ata aac act ctt caa aca caa gtg gaa gtg aaa aaa 197  
Trp Ser Ser Ile Ile Asn Thr Leu Gln Thr Gln Val Glu Val Lys Lys  
39 44 49 54

cga agg cac cgt tta aaa cga cat aat gac tgc ttt gtt ggt tca gaa 245  
Arg Arg His Arg Leu Lys Arg His Asn Asp Cys Phe Val Gly Ser Glu  
55 60 65 70

gct gtg gat gtc att ttt tct cac cta att cag aat aag tat ttt ggt 293  
Ala Val Asp Val Ile Phe Ser His Leu Ile Gln Asn Lys Tyr Phe Gly  
71 76 81 86

gat gta gat att cct cga gcc aaa gtg gtg aga gtg tgt caa gcg ctt 341  
Asp Val Asp Ile Pro Arg Ala Lys Val Val Arg Val Cys Gln Ala Leu  
87 92 97 102

atg gac tac aaa gta ttt gaa gca gtt cca acc aaa gtc ttt gga aaa 389  
Met Asp Tyr Lys Val Phe Glu Ala Val Pro Thr Lys Val Phe Gly Lys  
103 108 113 118

gac aaa aaa cct aca ttt gaa gat agt agt tgc agc ctt tat aga ttc 437  
Asp Lys Lys Pro Thr Phe Glu Asp Ser Ser Cys Ser Leu Tyr Arg Phe  
119 124 129 134

acc aca ata cct aac caa gac agt cag tta ggc aaa gag aac aaa cta 485  
Thr Thr Ile Pro Asn Gln Asp Ser Gln Leu Gly Lys Glu Asn Lys Leu  
135 140 145 150

tat tca cct gcc agg tat gca gat gca tta ttt aag tca tcc gat atc 533  
Tyr Ser Pro Ala Arg Tyr Ala Asp Ala Leu Phe Lys Ser Ser Asp Ile  
151 156 161 166

aga tca gcc agt tta gag gac ctg tgg gaa aat ctg agt tta aag cct 581  
Arg Ser Ala Ser Leu Glu Asp Leu Trp Glu Asn Leu Ser Leu Lys Pro  
167 172 177 182

gcc aac tcc cct cat gta aat atc tct aca acc ttg tct cca caa gtt 629  
Ala Asn Ser Pro His Val Asn Ile Ser Thr Thr Leu Ser Pro Gln Val  
183 188 193 198

att aat gaa gtg tgg caa gaa gaa aca att ggg cgt cta cta caa ctt 677  
Ile Asn Glu Val Trp Gln Glu Glu Thr Ile Gly Arg Leu Leu Gln Leu

199	204	209	214	
gta gac ctt cca ctt ctt gac tcc tta ctg aaa cag caa gag gct gta				725
Val Asp Leu Pro Leu Leu Asp Ser Leu Leu Lys Gln Gln Glu Ala Val				
215	220	225	230	
cct aaa att cct caa cct aag agg cag tcc acc atg gtc aac agc agt				773
Pro Lys Ile Pro Gln Pro Lys Arg Gln Ser Thr Met Val Asn Ser Ser				
231	236	241	246	
aac tat ctg gat cga ggg att ctc aag gct tat agt gac tct cag gaa				821
Asn Tyr Leu Asp Arg Gly Ile Leu Lys Ala Tyr Ser Asp Ser Gln Glu				
247	252	257	262	
gat gag tgg ctc tcg gca gca att gac tgt tta gaa tac ctt cca gac				869
Asp Glu Trp Leu Ser Ala Ala Ile Asp Cys Leu Glu Tyr Leu Pro Asp				
263	268	273	278	
caa atg gtg gtg gaa ata agc aga agc ttt cct gag caa cca gac cga				917
Gln Met Val Val Glu Ile Ser Arg Ser Phe Pro Glu Gln Pro Asp Arg				
279	284	289	294	
aca gac tta gtg aaa gaa ctt ctg ttt gat gcc att ggc aga tat tac				965
Thr Asp Leu Val Lys Glu Leu Leu Phe Asp Ala Ile Gly Arg Tyr Tyr				
295	300	305	310	
agt agt agg gaa cct ctg tta aat cac tta tct gac gtt cat aat gga				1013
Ser Ser Arg Glu Pro Leu Leu Asn His Leu Ser Asp Val His Asn Gly				
311	316	321	326	
att gca gaa ctc tta gtg aat ggg aag acg gaa ata gct tta gaa gct				1061
Ile Ala Glu Leu Leu Val Asn Gly Lys Thr Glu Ile Ala Leu Glu Ala				
327	332	337	342	
acc cag ctc ctt cta aag ctt tta gat ttc caa aat aga gaa gaa ttt				1109
Thr Gln Leu Leu Leu Lys Leu Leu Asp Phe Gln Asn Arg Glu Glu Phe				
343	348	353	358	
aga aga cta ctg tat ttc atg gct gtt gca gca aat cct tct gag ttt				1157
Arg Arg Leu Leu Tyr Phe Met Ala Val Ala Ala Asn Pro Ser Glu Phe				
359	364	369	374	
aaa tta cag aaa gaa agt gac aac cga atg gtt gtg aaa agg ata ttc				1205
Lys Leu Gln Lys Glu Ser Asp Asn Arg Met Val Val Lys Arg Ile Phe				
375	380	385	390	
tca aaa gct att gtt gac aat aaa aat tta tcc aaa ggc aaa aca gat				1253
Ser Lys Ala Ile Val Asp Asn Lys Asn Leu Ser Lys Gly Lys Thr Asp				
391	396	401	406	
ctt ctg gta ctc ttt tta atg gat cat cag aaa gat gtt ttt aag att				1301
Leu Leu Val Leu Phe Leu Met Asp His Gln Lys Asp Val Phe Lys Ile				
407	412	417	422	
cct gga act cta cat aaa att gta agt gtt aag ctt atg gcc ata cag				1349
Pro Gly Thr Leu His Lys Ile Val Ser Val Lys Leu Met Ala Ile Gln				
423	428	433	438	

aac gga aga gat cca aat aga gat gca gga tat att tat tgc cag aga 1397  
 Asn Gly Arg Asp Pro Asn Arg Asp Ala Gly Tyr Ile Tyr Cys Gln Arg  
 439 444 449 454

att gat caa cgt gac tat tcc aac aat aca gag aag aca acc aaa gat 1445  
 Ile Asp Gln Arg Asp Tyr Ser Asn Asn Thr Glu Lys Thr Thr Lys Asp  
 455 460 465 470

gag ctg ttg aat tta cta aaa act ctt gat gag gat tca aaa ctt tct 1493  
 Glu Leu Leu Asn Leu Leu Lys Thr Leu Asp Glu Asp Ser Lys Leu Ser  
 471 476 481 486

gcc aaa gag aag aaa aaa ttg cta ggt caa ttc tat aag tgt cac cca 1541  
 Ala Lys Glu Lys Lys Lys Leu Leu Gly Gln Phe Tyr Lys Cys His Pro  
 487 492 497 502

gac atc ttt att gag cat ttt gga gac tga g tttttaatat ctgtatataa 1592  
 Asp Ile Phe Ile Glu His Phe Gly Asp \*  
 503 508

gttgtgtatt ttaagaataa attatgtatc ctaaatatcc aatcacattt gtaagtgtgg 1652

aagctctaaa tttgaaactg tacttaataa aaattttttt gtataaaaaa aaaaaa 1708

<210> 276  
 <211> 1582  
 <212> DNA  
 <213> Homo sapiens

<220>  
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 <222> (132)..(1052)

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gcggccgctc gcgatctaga gccgagggca cgtgcatgcc ccctgggttaa gagttgcagg 120

tagcggtagc g atg gac act ctg gat cga gta gta aag ccc aaa acg aaa 170  
 Met Asp Thr Leu Asp Arg Val Val Lys Pro Lys Thr Lys  
 1 5 10

aga gcc aag aga ttc ctt gag aag aga gaa ccg aaa ctc aat gaa aat 218  
 Arg Ala Lys Arg Phe Leu Glu Lys Arg Glu Pro Lys Leu Asn Glu Asn  
 14 19 24 29

att aaa aat gcc atg ctg att aaa ggg gga aat gca aat gca aca gtg 266  
 Ile Lys Asn Ala Met Leu Ile Lys Gly Gly Asn Ala Asn Ala Thr Val  
 30 35 40 45

aca aaa gta ctt aaa gat gtg tat gca ctg aaa aaa cca tac agt gta 314  
 Thr Lys Val Leu Lys Asp Val Tyr Ala Leu Lys Lys Pro Tyr Ser Val  
 46 51 56 61

cta tat aaa aag aaa aat att aca aga cct ttt gag gat cag aca tca	362
Leu Tyr Lys Lys Lys Asn Ile Thr Arg Pro Phe Glu Asp Gln Thr Ser	
62 67 72 77	
ctg gaa ttc ttt tca aag aag tca gat tgt tct tta ttc atg ttt ggc	410
Leu Glu Phe Phe Ser Lys Lys Ser Asp Cys Ser Leu Phe Met Phe Gly	
78 83 88 93	
tcc cat aat aag aag cgg cca aat aat cta gta ata ggt cgt atg tat	458
Ser His Asn Lys Lys Arg Pro Asn Asn Leu Val Ile Gly Arg Met Tyr	
94 99 104 109	
gac tac cat gtg ctg gat atg att gaa tta ggt att gag aat ttt gtc	506
Asp Tyr His Val Leu Asp Met Ile Glu Leu Gly Ile Glu Asn Phe Val	
110 115 120 125	
tct cta aaa gac att aag aac agt aaa tgt cct gag gga aca aaa ccc	554
Ser Leu Lys Asp Ile Lys Asn Ser Lys Cys Pro Glu Gly Thr Lys Pro	
126 131 136 141	
atg ctg ata ttt gct ggc gat gat ttc gat gta aca gaa gat tat aga	602
Met Leu Ile Phe Ala Gly Asp Asp Phe Asp Val Thr Glu Asp Tyr Arg	
142 147 152 157	
aga cta aaa agt ctt ctt att gat ttc ttc aga ggc ccc aca gta tca	650
Arg Leu Lys Ser Leu Leu Ile Asp Phe Phe Arg Gly Pro Thr Val Ser	
158 163 168 173	
aat atc cgc ctg gct gga tta gag tat gtt ctg cac ttc act gca ctg	698
Asn Ile Arg Leu Ala Gly Leu Glu Tyr Val Leu His Phe Thr Ala Leu	
174 179 184 189	
aat ggg aag att tac ttt cga agc tat aag ttg ctg ttg aag aaa tct	746
Asn Gly Lys Ile Tyr Phe Arg Ser Tyr Lys Leu Leu Leu Lys Lys Ser	
190 195 200 205	
ggg tgc aga aca cca cgg att gaa ttg gaa gag atg gga ccc tca ttg	794
Gly Cys Arg Thr Pro Arg Ile Glu Leu Glu Glu Met Gly Pro Ser Leu	
206 211 216 221	
gat ctg gtt ctg agg agg aca cac ctg gca tcg gat gac ctt tat aaa	842
Asp Leu Val Leu Arg Arg Thr His Leu Ala Ser Asp Asp Leu Tyr Lys	
222 227 232 237	
tta tct atg aaa atg cca aaa gct ctc aag cca aag aag aag aaa aat	890
Leu Ser Met Lys Met Pro Lys Ala Leu Lys Pro Lys Lys Lys Lys Asn	
238 243 248 253	
att tcc cat gat act ttt ggt aca act tat gga agg att cat atg cag	938
Ile Ser His Asp Thr Phe Gly Thr Thr Tyr Gly Arg Ile His Met Gln	
254 259 264 269	
aag caa gac cta agc aaa cta caa acc agg aaa atg aag ggg ttg aag	986
Lys Gln Asp Leu Ser Lys Leu Gln Thr Arg Lys Met Lys Gly Leu Lys	
270 275 280 285	

aag cga cct gca gaa agg ata aca gaa gac cac gag aaa aag tca aaa 1034  
 Lys Arg Pro Ala Glu Arg Ile Thr Glu Asp His Glu Lys Lys Ser Lys  
 286 291 296 301

aga att aaa aaa aat tga tggaac ttagccagcc actattatatt cattgtgttc 1088  
 Arg Ile Lys Lys Asn \*  
 302 307

tacttaagag aattatcaag catcaatcca ttcagagttt cttataagat cttattatat 1148

atttttataa catgataatt ttacgatata ttattatgaa cagtaatata ctagtatttaa 1208

gtgtaaagta agcctttttat ttgagacatt acaccctggg gtgccatttt ctcttgtgat 1268

atcccctgcc ctccacaaat tcttctttct cattgggtgg atggatgggt gaggagggat 1328

ctccataacc attgggattt ttttgaattt ctggccttag ctaaagaaag ccacagaaag 1388

cgggaccgc aggagctgtg taaacaatct cagtatgaat tacctggaaa gttaacctcc 1448

tctcccaaca tggatctaca ttctgatttt tattttctac ttttctttta ttttgctga 1508

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agaaaaaaaa aaaa 1582

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 <212> DNA  
 <213> Homo sapiens

<220>  
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 <222> (23)..(3130)

<400> 277  
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 1 5

ttc aac ctg gac gtg gaa aag ctc aca gtg tac agc ggc ccc aag ggc 100  
 Phe Asn Leu Asp Val Glu Lys Leu Thr Val Tyr Ser Gly Pro Lys Gly  
 11 16 21 26

agc tac ttc ggc tac gcc gtg gac ttc cac ata ccc gac gcc cgc aca 148  
 Ser Tyr Phe Gly Tyr Ala Val Asp Phe His Ile Pro Asp Ala Arg Thr  
 27 32 37 42

gcg agt gtc ttg gtg ggg gcg ccc aaa gcc aac acc agc cag ccc gat 196  
 Ala Ser Val Leu Val Gly Ala Pro Lys Ala Asn Thr Ser Gln Pro Asp  
 43 48 53 58

atc gtg gaa ggg gga gcc gtc tat tac tgt cct tgg ccc gcg gag ggg 244  
 Ile Val Glu Gly Gly Ala Val Tyr Tyr Cys Pro Trp Pro Ala Glu Gly

59	64	69	74	
tct gcg cag tgc agg	cag ata ccg ttt gac	acc acc aac aac aga aag	292	
Ser Ala Gln Cys Arg	Gln Ile Pro Phe Asp	Thr Thr Asn Asn Arg Lys		
75	80	85	90	
atc aga gtt aat gga	acc aaa gaa cct atc	gag ttc aaa tcc aat cag	340	
Ile Arg Val Asn Gly	Thr Lys Glu Pro Ile	Glu Phe Lys Ser Asn Gln		
91	96	101	106	
tgg ttt gga gca aca	gtg aaa gct cac aaa	gga aaa gtt gtg gcc tgt	388	
Trp Phe Gly Ala Thr	Val Lys Ala His Lys	Gly Lys Val Val Ala Cys		
107	112	117	122	
gct cct tta tat cac	tgg aga act ctt aaa	ccg aca cca gaa aaa gga	436	
Ala Pro Leu Tyr His	Trp Arg Thr Leu Lys	Pro Thr Pro Glu Lys Gly		
123	128	133	138	
cca gtt ggc acc tgc	tat gta gca att cag	aac ttc agc gct tat gcc	484	
Pro Val Gly Thr Cys	Tyr Val Ala Ile Gln	Asn Phe Ser Ala Tyr Ala		
139	144	149	154	
gag ttc tct cct tgc	gga aac agc aat gct	gat ccg gaa ggc cag ggt	532	
Glu Phe Ser Pro Cys	Gly Asn Ser Asn Ala	Asp Pro Glu Gly Gln Gly		
155	160	165	170	
tac tgc caa gca gga	ttt agt ctg gat ttt	tat aag aat gga gac ctt	580	
Tyr Cys Gln Ala Gly	Phe Ser Leu Asp Phe	Tyr Lys Asn Gly Asp Leu		
171	176	181	186	
att gtg gga gga cct	ggg agt ttc tac tgg	caa gga caa gtg atc act	628	
Ile Val Gly Gly Pro	Gly Ser Phe Tyr Trp	Gln Gly Gln Val Ile Thr		
187	192	197	202	
gcc agt gtt gca gat	atc att gca aat tac	tca ttc aag gat atc ctc	676	
Ala Ser Val Ala Asp	Ile Ile Ala Asn Tyr	Ser Phe Lys Asp Ile Leu		
203	208	213	218	
agg aaa ctg gca gga	gaa aag cag acg gaa	gtg gct cca gct tcc tat	724	
Arg Lys Leu Ala Gly	Glu Lys Gln Thr Glu	Val Ala Pro Ala Ser Tyr		
219	224	229	234	
gat gac agt tac ctt	gga tac tca gtt gct	gct ggg gag ttt act ggg	772	
Asp Asp Ser Tyr Leu	Gly Tyr Ser Val Ala	Ala Gly Glu Phe Thr Gly		
235	240	245	250	
gat tct cag caa gaa	ttg gtt gct gga att	cca aga gga gca cag aat	820	
Asp Ser Gln Gln Glu	Leu Val Ala Gly Ile	Pro Arg Gly Ala Gln Asn		
251	256	261	266	
ttt gga tat gtt tcc	atc att aac tcc tac	gat atg acg ttt att cag	868	
Phe Gly Tyr Val Ser	Ile Ile Asn Ser Tyr	Asp Met Thr Phe Ile Gln		
267	272	277	282	
aat ttc acg gga gaa	cag atg gca tct tat	ttt gga tat acc gtt gtc	916	
Asn Phe Thr Gly Glu	Gln Met Ala Ser Tyr	Phe Gly Tyr Thr Val Val		
283	288	293	298	

gta tca gat gtt aac agt gat gga ctg gat gat gtc ctg gtt ggg gca	964
Val Ser Asp Val Asn Ser Asp Gly Leu Asp Asp Val Leu Val Gly Ala	
299 304 309 314	
cct ctc ttt atg gaa cgt gaa ttt gag agc aac ccc aga gaa gta ggg	1012
Pro Leu Phe Met Glu Arg Glu Phe Glu Ser Asn Pro Arg Glu Val Gly	
315 320 325 330	
caa atc tac ctg tat ttg caa gtg agc tct ctc ctc ttc aga gac ccc	1060
Gln Ile Tyr Leu Tyr Leu Gln Val Ser Ser Leu Leu Phe Arg Asp Pro	
331 336 341 346	
cag atc ctc act ggc acc gag acg ttt ggg aga ttc ggt agt gct atg	1108
Gln Ile Leu Thr Gly Thr Glu Thr Phe Gly Arg Phe Gly Ser Ala Met	
347 352 357 362	
gca cac tta gga gac ctg aac caa gat ggc tac aat gac att gcc atc	1156
Ala His Leu Gly Asp Leu Asn Gln Asp Gly Tyr Asn Asp Ile Ala Ile	
363 368 373 378	
gga gtg cct ttt gca ggc aag gat caa aga ggc aaa gtg ctc att tat	1204
Gly Val Pro Phe Ala Gly Lys Asp Gln Arg Gly Lys Val Leu Ile Tyr	
379 384 389 394	
aat ggg aac aaa gat ggc tta aac acc aag cct tcc caa gtt ctg caa	1252
Asn Gly Asn Lys Asp Gly Leu Asn Thr Lys Pro Ser Gln Val Leu Gln	
395 400 405 410	
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Cys Val Pro Asp Leu Lys Leu Ser Ala Arg Pro Asp Lys His Gln Val	
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Ile Ile Gly Asp Glu Asn His Leu Met Leu Ile Ile Asn Ala Arg Asn	
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Pro Gly Ala Gly Ser Asp Ala Gln Gly Pro Gln Phe Gly Trp Asp His	
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Ser Leu His Lys Arg Lys Arg Leu Pro Pro Val Lys Arg Ser Leu Val	
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Gln Val Leu Leu Leu Ala Asn Pro Gln Lys Glu Lys Val Arg Leu Arg	
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Tyr Lys Leu Thr Phe Thr Met Gly Asp Gln Thr Tyr Asn Glu Met Gly	
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gat gtg gac cag ttc ccc cca cct gaa acc tgg ggt agc ctc tag aac	2040



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622

627

632

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cgggagatct tcaaaatggg agcccagagg caccgcccag gcctcggaag gtgtcagggg 180

gaacttttccg tggttttcagc gtcgtcgcct ggagcggcgg tttagagagc cgagcctgat 240

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Met Ala Thr Cys Ile Gly Glu

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5

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Lys Ile Glu Asp Phe Lys Val Gly Asn Leu Leu Gly Lys Gly Ser Phe  
8 13 18 23

gct ggt gtc tac aga gct gag tcc att cac act ggt ttg gaa gtt gca 450  
Ala Gly Val Tyr Arg Ala Glu Ser Ile His Thr Gly Leu Glu Val Ala  
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Ile Lys Met Ile Asp Lys Lys Ala Met Tyr Lys Ala Gly Met Val Gln  
40 45 50 55

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56 61 66 71

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Ile Leu Glu Leu Tyr Asn Tyr Phe Glu Asp Ser Asn Tyr Val Tyr Leu  
72 77 82 87

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Val Leu Glu Met Cys His Asn Gly Glu Met Asn Arg Tyr Leu Lys Asn  
88 93 98 103

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120 125 130 135

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184 189 194 199

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Val Lys Asn Thr Leu Asn Lys Val Val Leu Ala Asp Tyr Glu Met Pro	
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Arg Asn Pro Ala Asp Arg Leu Ser Leu Ser Ser Val Leu Asp His Pro	
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Phe Met Ser Arg Asn Ser Ser Thr Lys Ser Lys Asp Leu Gly Thr Val	
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Lys Thr Tyr Thr Met Glu Arg Cys His Ser Ala Glu Met Leu Ser Val	
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Ser Lys Arg Ser Gly Gly Gly Glu Asn Glu Glu Arg Tyr Ser Pro Thr	
408 413 418 423	
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Ser	Ser	Gly	Ser	Phe	Glu	Arg	Pro	Asp	Asn	Asn	Gln	Ala	Leu	Ser	Asn		
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His	Leu	Cys	Pro	Gly	Lys	Thr	Pro	Phe	Pro	Phe	Ala	Asp	Pro	Thr	Pro		
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Gln	Thr	Glu	Thr	Val	Gln	Gln	Trp	Phe	Gly	Asn	Leu	Gln	Ile	Asn	Ala		
472					477					482					487		
cat	tta	aga	aaa	act	act	gaa	tat	gac	agc	atc	agc	cca	aac	cgg	gac		1842
His	Leu	Arg	Lys	Thr	Thr	Glu	Tyr	Asp	Ser	Ile	Ser	Pro	Asn	Arg	Asp		
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Phe	Gln	Gly	His	Pro	Asp	Leu	Gln	Lys	Asp	Thr	Ser	Lys	Asn	Ala	Trp		
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Asn	Arg	Thr	Leu	Arg	Ser	Ile	Thr	Ser	Pro	Leu	Val	Ala	His	Arg	Leu		
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Lys	Pro	Ile	Arg	Gln	Lys	Thr	Lys	Lys	Ala	Val	Val	Ser	Ile	Leu	Asp		
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Tyr	Val	Lys	Glu	Val	Leu	Gln	Ile	Ser	Ser	Asp	Gly	Asn	Thr	Ile	Thr		
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Glu Lys Tyr Trp Arg Lys Tyr Gln Tyr Ala Ser Arg Phe Val Gln Leu				
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gta aga tct aaa tct ccc aaa atc act tat ttt aca aga tat gct aaa				2466
Val Arg Ser Lys Ser Pro Lys Ile Thr Tyr Phe Thr Arg Tyr Ala Lys				
696	701	706	711	
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Cys Ile Leu Met Glu Asn Ser Pro Gly Ala Asp Phe Glu Val Trp Phe				
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Tyr Asp Gly Val Lys Ile His Lys Thr Glu Asp Phe Ile Gln Val Ile				
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744	749	754	759	
agc ttg aaa gag gag ata aaa atg tat atg gac cat gct aat gag ggt				2658
Ser Leu Lys Glu Glu Ile Lys Met Tyr Met Asp His Ala Asn Glu Gly				
760	765	770	775	
cat cgt att tgt tta gca ctg gaa tcc ata att tca gaa gag gaa agg				2706
His Arg Ile Cys Leu Ala Leu Glu Ser Ile Ile Ser Glu Glu Glu Arg				
776	781	786	791	
aaa act agg agt gct ccc ttt ttc cca ata atc ata gga aga aaa cct				2754
Lys Thr Arg Ser Ala Pro Phe Phe Pro Ile Ile Ile Gly Arg Lys Pro				
792	797	802	807	
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Gly Ser Thr Ser Ser Pro Lys Ala Leu Ser Pro Pro Pro Ser Val Asp				
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Ser Asn Tyr Pro Thr Arg Asp Arg Ala Ser Phe Asn Arg Met Val Met				
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His Ser Ala Ala Ser Pro Thr Gln Ala Pro Ile Leu Asn Pro Ser Met				
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Val Thr Asn Glu Gly Leu Gly Leu Thr Thr Thr Ala Ser Gly Thr Asp				
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Ile Ser Ser Asn Ser Leu Lys Asp Cys Leu Pro Lys Ser Ala Gln Leu				
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Gln Ala Gly Val Ser Ser Ile Ser Tyr Thr Ser Pro Asn Gly Gln Thr	
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936 941 946 951	
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Asn Phe His *	
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Ile Arg Arg Leu Ala Ala Asp Phe Gln Arg Ala Gln Phe Ala Glu Ala						
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Thr Gln Arg Leu Ser Glu Arg Asn Cys Ile Glu Ile Val Asn Lys Leu						
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Ile Ala Gln Lys Gln Leu Glu Val Val His Thr Leu Asp Gly Lys Glu						
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Tyr Ile Thr Pro Ala Gln Ile Ser Lys Glu Met Arg Asp Glu Leu His						
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Val Arg Gly Gly Arg Val Asn Ile Val Asp Leu Gln Gln Val Ile Asn						
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Val Asp Leu Ile His Ile Glu Asn Arg Ile Gly Asp Ile Ile Lys Ser						
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gaa aag cat gtt cag tta gtg ttg gga caa ctg ata gat gag aat tat						448
Glu Lys His Val Gln Leu Val Leu Gly Gln Leu Ile Asp Glu Asn Tyr						
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Leu Asp Arg Leu Ala Glu Glu Val Asn Asp Lys Leu Gln Glu Ser Gly						
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cag gtc acc ata tca gaa ctg tgt aaa act tat gat ctt cct ggg aac						544
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Phe Leu Thr Gln Ala Leu Thr Gln Arg Leu Gly Arg Ile Ile Ser Gly						
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gct cga cat aaa gca cgt atc cgt gga cta ttc agt gct att acc cgg						688
Ala Arg His Lys Ala Arg Ile Arg Gly/Leu Phe Ser Ala Ile Thr Arg						
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Ala	Val	Ser	Tyr	Ile	Lys	Lys	Arg	Tyr	Lys	Thr	Thr	Gln	Leu	Leu	Phe	
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Ser	Val	Glu	Glu	Ala	Ile	Ser	Ser	Gly	Thr	Trp	Val	Asp	Ile	Ala	Pro	
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Leu	Leu	Pro	Thr	Ser	Leu	Ser	Val	Glu	Asp	Ala	Ala	Ile	Leu	Leu	Gln	
328					333					338					343	
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Gln	Val	Met	Arg	Ala	Phe	Ser	Lys	Gln	Ala	Ser	Thr	Val	Val	Phe	Ser	
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cca	gag	atc	agt	ttt	atg	ttc	cag	gat	gag	att	gaa	gat	ttt	tta	aga	1552
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Ala	Cys	Asp	Ile	Met	Val	Lys	Arg	Gly	Asp	Lys	Lys	Arg	Glu	Arg	Gln	

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Phe Ser Thr His Ser Met Leu His Ala Pro Gly Arg Cys Val Pro Gln				
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Met Glu Gly Ile Pro Gly Phe Pro Gly

1 5

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Asn Arg Gly Leu Met Gly Gln Lys Gly Glu Ile Gly Pro Pro Gly Gln  
10 15 20 25

caa gga aaa aaa gga gcc cca ggg atg cct ggt tta atg gga agc aat 207  
Gln Gly Lys Lys Gly Ala Pro Gly Met Pro Gly Leu Met Gly Ser Asn  
26 31 36 41

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Gly Ser Pro Gly Gln Pro Gly Thr Pro Gly Ser Lys Gly Ser Lys Gly  
42 47 52 57

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Glu Pro Gly Ile Gln Gly Met Pro Gly Ala Ser Gly Leu Lys Gly Glu  
58 63 68 73

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Pro Gly Ala Thr Gly Ser Pro Gly Glu Pro Gly Tyr Met Gly Leu Pro  
74 79 84 89

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Gly Ile Gln Gly Lys Lys Gly Asp Lys Gly Asn Gln Gly Glu Lys Gly  
90 95 100 105

att cag ggt caa aag gga gaa aat gga aga cag gga att cca ggg caa 447  
Ile Gln Gly Gln Lys Gly Glu Asn Gly Arg Gln Gly Ile Pro Gly Gln  
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122 127 132 137

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138 143 148 153

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170 175 180 185

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Phe Ser Glu Gln Phe Ile Arg Gln Val Cys Thr Asp Val Ile Arg Ala  
186 191 196 201

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Gln Leu Pro Val Leu Leu Gln Ser Gly Arg Ile Arg Asn Cys Asp His

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Cys Leu Ser Gln His Gly Ser Pro Gly Ile Pro Gly Pro Pro Gly Pro				
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Ile Gly Pro Glu Gly Pro Arg Gly Leu Pro Gly Leu Pro Gly Arg Asp				
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Gly Val Pro Gly Leu Val Gly Val Pro Gly Arg Pro Gly Val Arg Gly				
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Leu Lys Gly Leu Pro Gly Arg Asn Gly Glu Lys Gly Ser Gln Gly Phe				
266	271	276	281	
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Gly Tyr Pro Gly Glu Gln Gly Pro Pro Gly Pro Pro Gly Pro Glu Gly				
282	287	292	297	
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Pro Pro Gly Ile Ser Lys Glu Gly Pro Pro Gly Asp Pro Gly Leu Pro				
298	303	308	313	
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Gly Lys Asp Gly Asp His Gly Lys Pro Gly Ile Gln Gly Gln Pro Gly				
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ccc cca ggc atc tgc gac cca tca cta tgt ttt agt gta att gcc aga				1119
Pro Pro Gly Ile Cys Asp Pro Ser Leu Cys Phe Ser Val Ile Ala Arg				
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 Leu Arg Asn Ile Phe Leu Gln Tyr Ala Ser Thr Glu Val Asp Gly Glu  
 18 23 28 33  
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 Arg Tyr Met Thr Pro Glu Asp Phe Val Gln Arg Tyr Leu Gly Leu Tyr  
 34 39 44 49  
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 Asn Asp Pro Asn Ser Asn Pro Lys Ile Val Gln Leu Leu Ala Gly Val  
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Gln	Leu	Phe	Asp	Lys	Ser	Gly	Asn	Gly	Glu	Val	Thr	Phe	Glu	Asn	Val		
98					103					108					113		
aaa	gaa	att	ttt	gga	cag	act	att	att	cat	cat	cat	atc	cct	ttt	aac	501	
Lys	Glu	Ile	Phe	Gly	Gln	Thr	Ile	Ile	His	His	His	Ile	Pro	Phe	Asn		
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146					151					156					161		
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Met	Ile	Ser	Gly	Leu	Asp	Phe	Ser	Asp	Ile	Met	Val	Thr	Ile	Arg	Ser		
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Ala Gly Ala Val Gly Ala Thr Ala Val Tyr Pro Ile Asp Leu Val Lys				
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acc cga atg caa aac cag cgt ggc tct ggc tct gtt gtt ggg gag cta				1221
Thr Arg Met Gln Asn Gln Arg Gly Ser Gly Ser Val Val Gly Glu Leu				
354	359	364	369	
atg tac aaa aac agc ttt gac tgt ttt aag aaa gtc ttg cgt tat gag				1269
Met Tyr Lys Asn Ser Phe Asp Cys Phe Lys Lys Val Leu Arg Tyr Glu				
370	375	380	385	
ggc ttc ttt gga ctc tac agg ggt ctg ata cca caa ctt ata ggg gtt				1317
Gly Phe Phe Gly Leu Tyr Arg Gly Leu Ile Pro Gln Leu Ile Gly Val				
386	391	396	401	
gct cca gaa aag gcc att aaa ctg act gtt aat gat ttt gtt cgg gac				1365
Ala Pro Glu Lys Ala Ile Lys Leu Thr Val Asn Asp Phe Val Arg Asp				
402	407	412	417	
aaa ttt acc aga aga gat ggc tct gtt cca ctt cca gca gaa gtt ctt				1413
Lys Phe Thr Arg Arg Asp Gly Ser Val Pro Leu Pro Ala Glu Val Leu				
418	423	428	433	
gct gga ggc tgt gct gga ggc tct cag gtc att ttt acc aac cca ttg				1461
Ala Gly Gly Cys Ala Gly Gly Ser Gln Val Ile Phe Thr Asn Pro Leu				
434	439	444	449	
gag ata gtg aag att cgt ctg caa gta gct gga gag atc acc acg gga				1509
Glu Ile Val Lys Ile Arg Leu Gln Val Ala Gly Glu Ile Thr Thr Gly				
450	455	460	465	
ccc aga gtc agc gcc ctg aat gtg ctc cgg gac ttg gga att ttt ggt				1557
Pro Arg Val Ser Ala Leu Asn Val Leu Arg Asp Leu Gly Ile Phe Gly				
466	471	476	481	
ctg tat aag ggt gcc aaa gcg tgt ttc ctc cga gac att ccc ttc tct				1605
Leu Tyr Lys Gly Ala Lys Ala Cys Phe Leu Arg Asp Ile Pro Phe Ser				
482	487	492	497	
gca atc tat ttt cct gtt tat gct cat tgc aaa cta ctt ctg gct gat				1653
Ala Ile Tyr Phe Pro Val Tyr Ala His Cys Lys Leu Leu Leu Ala Asp				
498	503	508	513	
gaa aat gga cac gtg gga ggt tta aat ctt ctt gca gct gga gcc atg				1701
Glu Asn Gly His Val Gly Gly Leu Asn Leu Leu Ala Ala Gly Ala Met				
514	519	524	529	
gca ggt gtc cca gct gca tct ctg gtg acc cct gct gat gtc atc aag				1749
Ala Gly Val Pro Ala Ala Ser Leu Val Thr Pro Ala Asp Val Ile Lys				
530	535	540	545	



aca aga ctg cag gtg gct gcc cgc gct ggc cag acg aca tac agt ggt	1797
Thr Arg Leu Gln Val Ala Ala Arg Ala Gly Gln Thr Thr Tyr Ser Gly	
546 551 556 561	
gtc atc gac tgt ttc agg aag att ctc cgg gaa gaa ggg ccc tca gca	1845
Val Ile Asp Cys Phe Arg Lys Ile Leu Arg Glu Glu Gly Pro Ser Ala	
562 567 572 577	
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Phe Trp Lys Gly Thr Ala Ala Arg Val Phe Arg Ser Ser Pro Gln Phe	
578 583 588 593	
ggg gtt acc ttg gtc act tat gaa gtt ctc cag cgg tgg ttt tac att	1941
Gly Val Thr Leu Val Thr Tyr Glu Val Leu Gln Arg Trp Phe Tyr Ile	
594 599 604 609	
gat ttt gga ggc ctc aaa ccc gct ggt tca gaa cca aca cct aag tca	1989
Asp Phe Gly Gly Leu Lys Pro Ala Gly Ser Glu Pro Thr Pro Lys Ser	
610 615 620 625	
cgc att gca gac ctt cct cct gcc aac cct gat cac atc ggt gga tac	2037
Arg Ile Ala Asp Leu Pro Pro Ala Asn Pro Asp His Ile Gly Gly Tyr	
626 631 636 641	
aga ctc gcc aca gcc acg ttt gca ggc atc gaa aac aaa ttt ggc ctt	2085
Arg Leu Ala Thr Ala Thr Phe Ala Gly Ile Glu Asn Lys Phe Gly Leu	
642 647 652 657	
tat ctc ccg aaa ttt aag tct cct agt gtt gct gtg gtt cag cca aag	2133
Tyr Leu Pro Lys Phe Lys Ser Pro Ser Val Ala Val Val Gln Pro Lys	
658 663 668 673	
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Ala Ala Val Ala Ala Thr Gln *	
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ccaacaaatc acatttgtag aaatgtaatg cggttctgag tggcttgaaa tgtacagaat	2547
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aag ctc cgt tct ctt tta ccg cct gat cta cgg cta caa ttc tgg ctt 96  
 Lys Leu Arg Ser Leu Leu Pro Pro Asp Leu Arg Leu Gln Phe Trp Leu  
 17 22 27 32

cat gcc cgc ctc caa aag tgc ttc ctc tcg agg ggt tgt ggt tct tac 144  
 His Ala Arg Leu Gln Lys Cys Phe Leu Ser Arg Gly Cys Gly Ser Tyr  
 33 38 43 48

tgc gca ggc gca aaa gca agt cct ctt ccg ggc aaa atg gcg atg gga 192  
 Cys Ala Gly Ala Lys Ala Ser Pro Leu Pro Gly Lys Met Ala Met Gly  
 49 54 59 64

cta atg tgc gga cgc cgg gag ctt ctg cgc ttg cta cag tcc ggg cgt 240  
 Leu Met Cys Gly Arg Arg Glu Leu Leu Arg Leu Leu Gln Ser Gly Arg  
 65 70 75 80

cgg gtc cac agc gtc gca ggg ccc tcg caa tgg ctt ggg aaa ccg ctg 288  
 Arg Val His Ser Val Ala Gly Pro Ser Gln Trp Leu Gly Lys Pro Leu  
 81 86 91 96

acc aca cgg ctc cta ttc cca gta gcc ccg tgc tgc tgt cgc cca cac 336  
 Thr Thr Arg Leu Leu Phe Pro Val Ala Pro Cys Cys Cys Arg Pro His  
 97 102 107 112

tac ctc ttc ctt gcg gct tcc ggc ccc cgc agc ctc agt acc tct gct 384  
 Tyr Leu Phe Leu Ala Ala Ser Gly Pro Arg Ser Leu Ser Thr Ser Ala  
 113 118 123 128

atc tct ttt gca gaa gtc cag gtt cag gcc cct cct gtt gtt gct gca 432  
 Ile Ser Phe Ala Glu Val Gln Val Gln Ala Pro Pro Val Val Ala Ala  
 129 134 139 144

act ccc tca ccc aca gca gta cct gag gtg gct tct gga gag act gca 480  
 Thr Pro Ser Pro Thr Ala Val Pro Glu Val Ala Ser Gly Glu Thr Ala  
 145 150 155 160

gat gta gtc caa act gct gca gag cag agc ttc gct gaa ctg ggg ctg 528  
 Asp Val Val Gln Thr Ala Ala Glu Gln Ser Phe Ala Glu Leu Gly Leu  
 161 166 171 176

ggg tca tac acc cca gtg gga ctg atc cag aat tta ctg gaa ttt atg 576  
 Gly Ser Tyr Thr Pro Val Gly Leu Ile Gln Asn Leu Leu Glu Phe Met  
 177 182 187 192

cat gtt gat ctg ggc cta cct tgg tgg ggg gcc att gct gca tgt aca	624
His Val Asp Leu Gly Leu Pro Trp Trp Gly Ala Ile Ala Ala Cys Thr	
193 198 203 208	
gtc ttt gcc cgc tgc ctg att ttt cct ctc atc gtg acg ggc cag cga	672
Val Phe Ala Arg Cys Leu Ile Phe Pro Leu Ile Val Thr Gly Gln Arg	
209 214 219 224	
gag gca gcc agg atc cac aat cac ttg cca gag atc cag aag ttt tcc	720
Glu Ala Ala Arg Ile His Asn His Leu Pro Glu Ile Gln Lys Phe Ser	
225 230 235 240	
agt cga atc aga gag gcc aag tta gca gga gac cat att gag tat tac	768
Ser Arg Ile Arg Glu Ala Lys Leu Ala Gly Asp His Ile Glu Tyr Tyr	
241 246 251 256	
aag gct tcc tgc gag atg gca ctt tac cag aaa aaa cat ggt att aaa	816
Lys Ala Ser Ser Glu Met Ala Leu Tyr Gln Lys Lys His Gly Ile Lys	
257 262 267 272	
ctc tat aaa cct ctc att ctc cct gtg act cag gcc cca atc ttc atc	864
Leu Tyr Lys Pro Leu Ile Leu Pro Val Thr Gln Ala Pro Ile Phe Ile	
273 278 283 288	
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Ser Phe Phe Ile Ala Leu Arg Glu Met Ala Asn Leu Pro Val Pro Ser	
289 294 299 304	
ctg cag aca ggt ggc ctc tgg tgg ttc cag gat ctc acg gta tcc gat	960
Leu Gln Thr Gly Gly Leu Trp Trp Phe Gln Asp Leu Thr Val Ser Asp	
305 310 315 320	
ccc atc tac ata tta cca ctg gca gtc act gct aca atg tgg gct gtt	1008
Pro Ile Tyr Ile Leu Pro Leu Ala Val Thr Ala Thr Met Trp Ala Val	
321 326 331 336	
ctt gag cta ggt gct gag aca ggt gtg caa agt tct gac ctt cag tgg	1056
Leu Glu Leu Gly Ala Glu Thr Gly Val Gln Ser Ser Asp Leu Gln Trp	
337 342 347 352	
atg aga aat gtc atc aga atg atg ccc ctg ata acc ttg ccc ata acc	1104
Met Arg Asn Val Ile Arg Met Met Pro Leu Ile Thr Leu Pro Ile Thr	
353 358 363 368	
atg cat ttc ccc acg gca gtg ttt atg tac tgg ctc tcc tcc aat ttg	1152
Met His Phe Pro Thr Ala Val Phe Met Tyr Trp Leu Ser Ser Asn Leu	
369 374 379 384	
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Phe Ser Leu Val Gln Val Ser Cys Leu Arg Ile Pro Ala Val Arg Thr	
385 390 395 400	
gta ctt aaa atc ccc cag cgt gtt gta cat gac ctg gac aaa tta cct	1248
Val Leu Lys Ile Pro Gln Arg Val Val His Asp Leu Asp Lys Leu Pro	
401 406 411 416	
cca cgg gaa ggc ttc cta gag agc ttc aaa aaa ggc tgg aaa aat gct	1296



Glu Thr Thr Arg Gln Leu Ser Leu Ala Val Lys Asp Gly Leu Ile Val	
34 39 44 49	
gaa act cta aca gtg ggc tgc aaa ggt tca aaa gct ggt att gaa caa	370
Glu Thr Leu Thr Val Gly Cys Lys Gly Ser Lys Ala Gly Ile Glu Gln	
50 55 60 65	
gaa gga tat tgg ttg cca gga gat gag att gac tgg gaa aca gaa aat	418
Glu Gly Tyr Trp Leu Pro Gly Asp Glu Ile Asp Trp Glu Thr Glu Asn	
66 71 76 81	
cat gac tgg tat tgt ttt gaa tgc cat ttg cct gga gag gtg ttg ata	466
His Asp Trp Tyr Cys Phe Glu Cys His Leu Pro Gly Glu Val Leu Ile	
82 87 92 97	
tgt gac ctg tgt ttt cgt gtg tat cat tcc aag tgt ttg tct gat gag	514
Cys Asp Leu Cys Phe Arg Val Tyr His Ser Lys Cys Leu Ser Asp Glu	
98 103 108 113	
ttc agg ctt aga gac agc agt agt ccc tgg cag tgc cca gtt tgc agg	562
Phe Arg Leu Arg Asp Ser Ser Ser Pro Trp Gln Cys Pro Val Cys Arg	
114 119 124 129	
agc att aag aag aag aat aca aac aaa cag gag atg ggc aca tac ctc	610
Ser Ile Lys Lys Lys Asn Thr Asn Lys Gln Glu Met Gly Thr Tyr Leu	
130 135 140 145	
aga ttc att gtc tcc cgc atg aag gag agg gct ata gat ctt aat aaa	658
Arg Phe Ile Val Ser Arg Met Lys Glu Arg Ala Ile Asp Leu Asn Lys	
146 151 156 161	
aag ggg aag gac aat aaa cac ccg atg tac agg agg ctg gtg cac tca	706
Lys Gly Lys Asp Asn Lys His Pro Met Tyr Arg Arg Leu Val His Ser	
162 167 172 177	
gct gtg gac gtt ccc acc att caa gag aaa gtg aat gaa ggg aaa tac	754
Ala Val Asp Val Pro Thr Ile Gln Glu Lys Val Asn Glu Gly Lys Tyr	
178 183 188 193	
cga agt tat gaa gag ttc aaa gct gat gcc caa ttg ctt ctc cac aat	802
Arg Ser Tyr Glu Glu Phe Lys Ala Asp Ala Gln Leu Leu Leu His Asn	
194 199 204 209	
acc gtg att ttc tat gga gca gac agt gag caa gct gac att gcg agg	850
Thr Val Ile Phe Tyr Gly Ala Asp Ser Glu Gln Ala Asp Ile Ala Arg	
210 215 220 225	
atg cta tat aaa gac aca tgt cat gag ctg gat gaa ctg cag ctt tgc	898
Met Leu Tyr Lys Asp Thr Cys His Glu Leu Asp Glu Leu Gln Leu Cys	
226 231 236 241	
aag aat tgc ttt tac ttg tca aat gct cgt cct gac aac tgg ttc tgt	946
Lys Asn Cys Phe Tyr Leu Ser Asn Ala Arg Pro Asp Asn Trp Phe Cys	
242 247 252 257	
tat cct tgt ata cct aat cat gag ctg gtt tgg gct aaa atg aaa ggt	994
Tyr Pro Cys Ile Pro Asn His Glu Leu Val Trp Ala Lys Met Lys Gly	

258	263	268	273	
ttt ggg ttt tgg cca gcc aaa gtc atg cag	aaa gaa gac aat caa gtc	1042		
Phe Gly Phe Trp Pro Ala Lys Val Met Gln	Lys Glu Asp Asn Gln Val			
274	279	284 289		
gac gtt cgc ttc ttt ggc cac cac cac cag	agg gcc tgg att cct tct	1090		
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290	295	300 305		
gaa aac att caa gat atc aca gtc aac att	cat cgg ctg cac gtg aag	1138		
Glu Asn Ile Gln Asp Ile Thr Val Asn Ile	His Arg Leu His Val Lys			
306	311	316 321		
cgc agt atg ggt tgg aaa aag gcc tgt gat	gag ctg gag ctg cat cag	1186		
Arg Ser Met Gly Trp Lys Lys Ala Cys Asp	Glu Leu Glu Leu His Gln			
322	327	332 337		
cgt ttc cta cga gaa ggg aga ttt tgg aaa	tct aag aat gag gac cga	1234		
Arg Phe Leu Arg Glu Gly Arg Phe Trp Lys	Ser Lys Asn Glu Asp Arg			
338	343	348 353		
ggt gag gaa gag gca gaa tcc agt atc tcc	tcc acc agt aat gag cag	1282		
Gly Glu Glu Glu Ala Glu Ser Ser Ile Ser	Ser Thr Ser Asn Glu Gln			
354	359	364 369		
cta aag gtc act caa gaa cca aga gca aag	aaa gga cga cgt aat caa	1330		
Leu Lys Val Thr Gln Glu Pro Arg Ala Lys	Lys Gly Arg Arg Asn Gln			
370	375	380 385		
agt gtg gag ccc aaa aag gaa gaa cca gag	cct gaa aca gaa gca gta	1378		
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386	391	396 401		
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402	407	412 417		
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Ser Val Ser Thr Gln Thr Lys Lys Leu Ser	Ala Ser Ser Pro Arg Met			
418	423	428 433		
ctg cat cgg agc acc cag acc aca aac gac	ggc gtg tgt cag agc atg	1522		
Leu His Arg Ser Thr Gln Thr Thr Asn Asp	Gly Val Cys Gln Ser Met			
434	439	444 449		
tgc cat gac aaa tac acc aag atc ttc aat	gac ttc aaa gac cgg atg	1570		
Cys His Asp Lys Tyr Thr Lys Ile Phe Asn	Asp Phe Lys Asp Arg Met			
450	455	460 465		
aag tcg gac cac aag cgg gag aca gag cgt	gtt gtc cga gaa gct ctg	1618		
Lys Ser Asp His Lys Arg Glu Thr Glu Arg	Val Val Arg Glu Ala Leu			
466	471	476 481		
gag aag ctg cgt tct gaa atg gaa gaa gaa	aag aga caa gct gta aat	1666		
Glu Lys Leu Arg Ser Glu Met Glu Glu Glu	Lys Arg Gln Ala Val Asn			
482	487	492 497		

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498 503 508 513	
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Val Lys Glu Lys Cys Lys Glu Glu Phe Val Glu Glu Ile Lys Lys Leu	
514 519 524 529	
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Ala Thr Gln His Lys Gln Leu Ile Ser Gln Thr Lys Lys Lys Gln Trp	
530 535 540 545	
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Cys Tyr Asn Cys Glu Glu Glu Ala Met Tyr His Cys Cys Trp Asn Thr	
546 551 556 561	
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Ser Tyr Cys Ser Ile Lys Cys Gln Gln Glu His Trp His Ala Glu His	
562 567 572 577	
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Lys Arg Thr Cys Arg Arg Lys Arg *	
578 583	
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ttgccaacat tgaccgtatt acaaaatgtg aaacaactac attattottg aacct atg 178  
Met  
1  
gtg att ttt aca tca tta cac aga tat gtc att ttc att agt tgt atc 226  
Val Ile Phe Thr Ser Leu His Arg Tyr Val Ile Phe Ile Ser Cys Ile  
2 7 12 17  
att gtt ata aac tgg tat atg tct cga gtc cac ggt atg cac cct aaa 274  
Ile Val Ile Asn Trp Tyr Met Ser Arg Val His Gly Met His Pro Lys  
18 23 28 33  
gag acc acc cgt cag ctg agc tta gct gtg aaa gat ggt ctt att gtc 322  
Glu Thr Thr Arg Gln Leu Ser Leu Ala Val Lys Asp Gly Leu Ile Val  
34 39 44 49  
gaa act cta aca gtg ggc tgc aaa ggt tca aaa gct ggt att gaa caa 370  
Glu Thr Leu Thr Val Gly Cys Lys Gly Ser Lys Ala Gly Ile Glu Gln  
50 55 60 65  
gaa gga tat tgg ttg cca gga gat gag att agc att aag aag aag aat 418  
Glu Gly Tyr Trp Leu Pro Gly Asp Glu Ile Ser Ile Lys Lys Lys Asn  
66 71 76 81  
aca aac aaa cag gag atg ggc aca tac ctc aga ttc att gtc tcc cgc 466  
Thr Asn Lys Gln Glu Met Gly Thr Tyr Leu Arg Phe Ile Val Ser Arg  
82 87 92 97  
atg aag gag agg gct ata gat ctt aat aaa aag ggg aag gac aat aaa 514  
Met Lys Glu Arg Ala Ile Asp Leu Asn Lys Lys Gly Lys Asp Asn Lys



114  
 130  
 146  
 162  
 178  
 194  
 210  
 226  
 242  
 258  
 274  
 290  
 306  
 322

98	103	108	113	
cac ccg atg tac agg	agg ctg gtg cac tca	gct gtg gac gtt ccc	acc	562
His Pro Met Tyr Arg	Arg Leu Val His Ser	Ala Val Asp Val Pro	Thr	
114	119	124	129	
att caa gag aaa gtg	aat gaa ggg aaa tac	cga agt tat gaa gag	ttc	610
Ile Gln Glu Lys Val	Asn Glu Gly Lys Tyr	Arg Ser Tyr Glu Glu	Phe	
130	135	140	145	
aaa gct gat gcc caa	ttg ctt ctc cac aat	acc gtg att ttc tat	gga	658
Lys Ala Asp Ala Gln	Leu Leu Leu His Asn	Thr Val Ile Phe Tyr	Gly	
146	151	156	161	
gca gac agt gag caa	gct gac att gcg agg	atg cta tat aaa gac	aca	706
Ala Asp Ser Glu Gln	Ala Asp Ile Ala Arg	Met Leu Tyr Lys Asp	Thr	
162	167	172	177	
tgt cat gag ctg gat	gaa ctg cag ctt tgc	aag aat tgc ttt tac	ttg	754
Cys His Glu Leu Asp	Glu Leu Gln Leu Cys	Lys Asn Cys Phe Tyr	Leu	
178	183	188	193	
tca aat gct cgt cct	gac aac tgg ttc tgt	tat cct tgt ata cct	aat	802
Ser Asn Ala Arg Pro	Asp Asn Trp Phe Cys	Tyr Pro Cys Ile Pro	Asn	
194	199	204	209	
cat gag ctg gtt tgg	gct aaa atg aaa ggt	ttt ggg ttt tgg cca	gcc	850
His Glu Leu Val Trp	Ala Lys Met Lys Gly	Phe Gly Phe Trp Pro	Ala	
210	215	220	225	
aaa gtc atg cag aaa	gaa gac aat caa gtc	gac gtt cgc ttc ttt	ggc	898
Lys Val Met Gln Lys	Glu Asp Asn Gln Val	Asp Val Arg Phe Phe	Gly	
226	231	236	241	
cac cac cac cag agg	gcc tgg att cct tct	gaa aac att caa gat	atc	946
His His His Gln Arg	Ala Trp Ile Pro Ser	Glu Asn Ile Gln Asp	Ile	
242	247	252	257	
aca gtc aac att cat	cgg ctg cac gtg aag	cgc agt atg ggt tgg	aaa	994
Thr Val Asn Ile His	Arg Leu His Val Lys	Arg Ser Met Gly Trp	Lys	
258	263	268	273	
aag gcc tgt gat gag	ctg gag ctg cat cag	cgt ttc cta cga gaa	ggg	1042
Lys Ala Cys Asp Glu	Leu Glu Leu His Gln	Arg Phe Leu Arg Glu	Gly	
274	279	284	289	
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Arg Phe Trp Lys Ser	Lys Asn Glu Asp Arg	Gly Glu Glu Glu Ala	Glu	
290	295	300	305	
tcc agt atc tcc tcc	acc agt aat gag cag	cta aag gtc act caa	gaa	1138
Ser Ser Ile Ser Ser	Thr Ser Asn Glu Gln	Leu Lys Val Thr Gln	Glu	
306	311	316	321	
cca aga gca aag aaa	gga cga cgt aat caa	agt gtg gag ccc aaa	aag	1186
Pro Arg Ala Lys Lys	Gly Arg Arg Asn Gln	Ser Val Glu Pro Lys	Lys	
322	327	332	337	

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Glu Glu Pro Glu Pro Glu Thr Glu Ala Val Ser Ser Ser Gln Glu Ile	
338 343 348 353	
ccc acg atg cct cag ccc atc gaa aaa gtc tcc gtg tca act cag aca	1282
Pro Thr Met Pro Gln Pro Ile Glu Lys Val Ser Val Ser Thr Gln Thr	
354 359 364 369	
aag aag tta agt gcc tct tca cca aga atg ctg cat cgg agc acc cag	1330
Lys Lys Leu Ser Ala Ser Ser Pro Arg Met Leu His Arg Ser Thr Gln	
370 375 380 385	
acc aca aac gac ggc gtg tgt cag agc atg tgc cat gac aaa tac acc	1378
Thr Thr Asn Asp Gly Val Cys Gln Ser Met Cys His Asp Lys Tyr Thr	
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Lys Ile Phe Asn Asp Phe Lys Asp Arg Met Lys Ser Asp His Lys Arg	
402 407 412 417	
gag aca gag cgt gtt gtc cga gaa gct ctg gag aag ctg cgt tct gaa	1474
Glu Thr Glu Arg Val Val Arg Glu Ala Leu Glu Lys Leu Arg Ser Glu	
418 423 428 433	
atg gaa gaa gaa aag aga caa gct gta aat aaa gct gta gcc aac atg	1522
Met Glu Glu Glu Lys Arg Gln Ala Val Asn Lys Ala Val Ala Asn Met	
434 439 444 449	
cag ggt gag atg gac aga aaa tgt aag caa gta aag gaa aag tgt aag	1570
Gln Gly Glu Met Asp Arg Lys Cys Lys Gln Val Lys Glu Lys Cys Lys	
450 455 460 465	
gag gaa ttt gta gaa gaa atc aag aag ctg gca aca cag cac aag caa	1618
Glu Glu Phe Val Glu Glu Ile Lys Lys Leu Ala Thr Gln His Lys Gln	
466 471 476 481	
ctg att tct cag acc aag aag aag cag tgg tgc tac aac tgt gag gag	1666
Leu Ile Ser Gln Thr Lys Lys Lys Gln Trp Cys Tyr Asn Cys Glu Glu	
482 487 492 497	
gag gcc atg tac cac tgc tgc tgg aac aca tcc tac tgc tcc atc aag	1714
Glu Ala Met Tyr His Cys Cys Trp Asn Thr Ser Tyr Cys Ser Ile Lys	
498 503 508 513	
tgc cag cag gag cac tgg cac gcg gag cac aag cgc acc tgc cgc cgg	1762
Cys Gln Gln Glu His Trp His Ala Glu His Lys Arg Thr Cys Arg Arg	
514 519 524 529	
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Lys Arg *	
530	
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cctttaaaca cttttcgtga agaaattttg cacagtagtt taaatctttt gttaatgctc	1938

1009

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ggccagctga gtccgttttc cgcgcggggg tggcgccctt ccaacggtcc taacgcggg 180

ccggcagcaa ggagtgttcc tgggacctca gagaccaggc tcagagcctg acatccctgc 240

gaggggacag cctcatccgc ccaggccagt ggggggtctct acaagtgcc aggcctcaggt 300

gcagccccca gca atg cat cgc cgg aga ctg gcc ctg ggt ctg ggg ttc 349  
Met His Arg Arg Arg Leu Ala Leu Gly Leu Gly Phe  
1 5 10

tgc ctg ttg gcg ggc aca agc ctc agt gtc ctg tgg gtg tat ctt gag 397  
Cys Leu Leu Ala Gly Thr Ser Leu Ser Val Leu Trp Val Tyr Leu Glu  
13 18 23 28

aac tgg ctg cca gtc tcc tat gtc ccc tat tat ctg ccc tgc cca gag 445  
Asn Trp Leu Pro Val Ser Tyr Val Pro Tyr Tyr Leu Pro Cys Pro Glu  
29 34 39 44

atc ttc aac atg aag ctg cac tac aag agg gag aag cca ctc cag ccc 493  
Ile Phe Asn Met Lys Leu His Tyr Lys Arg Glu Lys Pro Leu Gln Pro  
45 50 55 60

gtg gta tgg tca cag tac cct cag ccc aag ctg ctg gag cac agg ccc 541  
Val Val Trp Ser Gln Tyr Pro Gln Pro Lys Leu Leu Glu His Arg Pro  
61 66 71 76

aca cag ctg ctg aca ctc aca ccc tgg ttg gcg ccc atc gtc tcc gag 589  
Thr Gln Leu Leu Thr Leu Thr Pro Trp Leu Ala Pro Ile Val Ser Glu  
77 82 87 92

gga acc ttc aac cca gag ctt ctg cag cac atc tac cag cca ctg aac 637  
Gly Thr Phe Asn Pro Glu Leu Leu Gln His Ile Tyr Gln Pro Leu Asn  
93 98 103 108

ctg acc att ggg gtc acg gtg ttt gcc gtg ggg aag tac act cat ttc 685  
Leu Thr Ile Gly Val Thr Val Phe Ala Val Gly Lys Tyr Thr His Phe  
109 114 119 124

atc cag tcc ttc ctg gag tca gcc gag gag ttc ttc atg cgt ggg tac 733  
Ile Gln Ser Phe Leu Glu Ser Ala Glu Glu Phe Phe Met Arg Gly Tyr  
125 130 135 140

cgg gtg cac tac tac atc ttc act gac aac cct gca gcc gtt ccc ggg 781  
Arg Val His Tyr Tyr Ile Phe Thr Asp Asn Pro Ala Ala Val Pro Gly  
141 146 151 156

gtc ccg ctg ggt ccc cac cgg ctt ctc agc tcc atc ccc atc cag ggt 829  
Val Pro Leu Gly Pro His Arg Leu Leu Ser Ser Ile Pro Ile Gln Gly  
157 162 167 172

cac tcc cac tgg gag gag aca tcc atg cgc cgg atg gag acc atc agc 877  
His Ser His Trp Glu Glu Thr Ser Met Arg Arg Met Glu Thr Ile Ser  
173 178 183 188

cag cac att gct aag agg gct cac cgg gag gtg gac tac ctc ttc tgc 925  
Gln His Ile Ala Lys Arg Ala His Arg Glu Val Asp Tyr Leu Phe Cys  
189 194 199 204

ctt gat gtg gac atg gtg ttt cgg aac ccg tgg ggc cct gag acc ttg 973

Leu Asp Val Asp Met Val Phe Arg Asn Pro Trp Gly Pro Glu Thr Leu	
205 210 215 220	
gga gac ctg gtg gct gcc att cac cca agc tac tac gcc gtt ccc cgc	1021
Gly Asp Leu Val Ala Ala Ile His Pro Ser Tyr Tyr Ala Val Pro Arg	
221 226 231 236	
cag cag ttc ccc tat gag cgc agg cgt gtt tcc act gcc ttt gtg gca	1069
Gln Gln Phe Pro Tyr Glu Arg Arg Arg Val Ser Thr Ala Phe Val Ala	
237 242 247 252	
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Asp Ser Glu Gly Asp Phe Tyr Tyr Gly Gly Ala Val Phe Gly Gly Gln	
253 258 263 268	
gtg gcc agg gta tat gag ttt act agg ggc tgc cac atg gcc atc ctg	1165
Val Ala Arg Val Tyr Glu Phe Thr Arg Gly Cys His Met Ala Ile Leu	
269 274 279 284	
gcg gac aag gcc aat ggc atc atg gct gcc tgg cgg gag gaa agc cac	1213
Ala Asp Lys Ala Asn Gly Ile Met Ala Ala Trp Arg Glu Glu Ser His	
285 290 295 300	
ctg aac cgt cac ttc atc tca aac aag ccg tcc aag gtg ctg tcc ccc	1261
Leu Asn Arg His Phe Ile Ser Asn Lys Pro Ser Lys Val Leu Ser Pro	
301 306 311 316	
gag tac ctc tgg gac gac agg aag ccc cag cca ccc agc ctg aag ctg	1309
Glu Tyr Leu Trp Asp Asp Arg Lys Pro Gln Pro Pro Ser Leu Lys Leu	
317 322 327 332	
atc cgc ttt tct aca ctg gac aag gat atc agc tgc ctg agg agc tga	1357
Ile Arg Phe Ser Thr Leu Asp Lys Asp Ile Ser Cys Leu Arg Ser *	
333 338 343 348	
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ggagactttt cgttttcatt tacgtgcgg aaactgaagt ttttgcctaa caccatgt 180  
aatgtaaacy tataggcttg agtacgtgtc aggccgcagt tgtagtgaac cctaaagctt 240  
tcctaattgt agttagcatc gtccctaagc ggaacgattt tccgtgaac atg att 295  
Met Ile  
1  
tgt act ttt cta cga gcc gta cag tat acg gag aag ctg cac agg tcc 343  
Cys Thr Phe Leu Arg Ala Val Gln Tyr Thr Glu Lys Leu His Arg Ser  
3 8 13 18  
tcg gca aag cga ttg ctt ttg cca tac atc gtg ctt aac aaa gcg tgc 391  
Ser Ala Lys Arg Leu Leu Leu Pro Tyr Ile Val Leu Asn Lys Ala Cys  
19 24 29 34  
ttg aag act gag ccc agt ttg aga tgt ggg ctt caa tat caa aag aaa 439  
Leu Lys Thr Glu Pro Ser Leu Arg Cys Gly Leu Gln Tyr Gln Lys Lys  
35 40 45 50  
acg ctg cga cct aga tgt att ctt gga gtc acc cag aaa acc atc tgg 487  
Thr Leu Arg Pro Arg Cys Ile Leu Gly Val Thr Gln Lys Thr Ile Trp  
51 56 61 66  
acg cag gga ccg agc ccc cga aaa gca aag gag gat agc agc acc caa 535  
Thr Gln Gly Pro Ser Pro Arg Lys Ala Lys Glu Asp Ser Ser Thr Gln  
67 72 77 82  
gtg tct gtg cac agg agt cag aga ggg gga acc gcc gtt cca aca tca 583  
Val Ser Val His Arg Ser Gln Arg Gly Gly Thr Ala Val Pro Thr Ser  
83 88 93 98  
caa tta gtg aat gaa gcc gga aga gat ttt acc tat tta ata gtg gtg 631  
Gln Leu Val Asn Glu Ala Gly Arg Asp Phe Thr Tyr Leu Ile Val Val  
99 104 109 114  
ctt ttt gga atc agc att aca ggt ggc ttg ttt tac acg att ttc aaa 679  
Leu Phe Gly Ile Ser Ile Thr Gly Gly Leu Phe Tyr Thr Ile Phe Lys  
115 120 125 130  
gaa ctt ttt tct tca tcc agt cct agc aag ata tat ggg aga gcc tta 727  
Glu Leu Phe Ser Ser Ser Ser Pro Ser Lys Ile Tyr Gly Arg Ala Leu  
131 136 141 146  
gaa aaa tgc aga tca cat cct gag gtg atc ggt gtc ttt ggt gag tct 775  
Glu Lys Cys Arg Ser His Pro Glu Val Ile Gly Val Phe Gly Glu Ser  
147 152 157 162  
gtt aaa ggc tat ggg gag gtg aca agg cgg ggt cgc cgg cag cat gtc 823  
Val Lys Gly Tyr Gly Glu Val Thr Arg Arg Gly Arg Arg Gln His Val

163	168	173	178	
agg ttc act gaa tat	gta aaa gat ggg ctg	aaa cac acg tgt gtg aaa		871
Arg Phe Thr Glu Tyr	Val Lys Asp Gly Leu	Lys His Thr Cys Val Lys		
179	184	189	194	
ttc tac att gag ggc	tct gag cca ggg aag	caa gga acg gtg tat gcg		919
Phe Tyr Ile Glu Gly	Ser Glu Pro Gly Lys	Gln Gly Thr Val Tyr Ala		
195	200	205	210	
caa gtg aaa gag aac	cca gga agt ggt gaa	tat gat ttt cga tat ata		967
Gln Val Lys Glu Asn	Pro Gly Ser Gly Glu	Tyr Asp Phe Arg Tyr Ile		
211	216	221	226	
ttt gta gaa att gaa	tct tat cct aga aga	act att atc att gaa gat		1015
Phe Val Glu Ile Glu	Ser Tyr Pro Arg Arg	Thr Ile Ile Ile Glu Asp		
227	232	237	242	
aat cga tcc caa gat	gat taa aa taatcaagca	agcagggtttc tgatggatgt		1068
Asn Arg Ser Gln Asp	Asp *			
243	248			
tgaaatggcgt ggactcgcta	ctccgttctt cacagctgcc	ttccagaatg tgttcaaaag		1128
aaagacaaga aggagtgtat	ggcttataaa gtgaatctaa	tacagtatgt gttgcattta		1188
aacaaactag acattttctt	acggaaaaat tatgaaatac	agcatatgtt atgtttctccc		1248
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gttattggaa atgttacacc	atgtaaataa aggaaataga	ttttagtatt gtattcattt		1368
tatattatag aactgcataa	tgtctgcaga ataaaaattaa	aactaacaaa tatgtcatta		1428
gcagctgccc tccgcatact	ttggaatctg acttgagata	agcatgtgaa aatgggtgag		1488
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tgaggaagga cacttgga	aaa
120	
ttgaacaagc gtcacttgac	aagcctatat aatcgggaga
acagatccca ttccaatcgt	
180	

tgccaagtat gatgtc	atg ggc atg ggt cgc atg gaa atg gag ctt gat	229
	Met Gly Met Gly Arg Met Glu Met Glu Leu Asp	
	1 5	
tat gct gaa gat gct acc gaa cgg cgc cgt gtc cta gaa gta gaa aaa	277	
Tyr Ala Glu Asp Ala Thr Glu Arg Arg Arg Val Leu Glu Val Glu Lys		
12 17 22 27		
gaa gac aca gaa gag ctg aga caa aag tac aag gat tat gtt gac aaa	325	
Glu Asp Thr Glu Glu Leu Arg Gln Lys Tyr Lys Asp Tyr Val Asp Lys		
28 33 38 43		
gag aag gca att gcc aaa gcc ttg gaa gac ctc aga gcc aac ttt tat	373	
Glu Lys Ala Ile Ala Lys Ala Leu Glu Asp Leu Arg Ala Asn Phe Tyr		
44 49 54 59		
tgt gaa ctg tgt gat aag caa tat cag aaa cat cag gaa ttt gat aac	421	
Cys Glu Leu Cys Asp Lys Gln Tyr Gln Lys His Gln Glu Phe Asp Asn		
60 65 70 75		
cat atc aac tcc tat gat cat gca cac aag cag aga tta aaa gat ctg	469	
His Ile Asn Ser Tyr Asp His Ala His Lys Gln Arg Leu Lys Asp Leu		
76 81 86 91		
aag cag aga gag ttt gct cga aat gtc tct tca aga tcc cgc aag gat	517	
Lys Gln Arg Glu Phe Ala Arg Asn Val Ser Ser Arg Ser Arg Lys Asp		
92 97 102 107		
gag aaa aaa cag gaa aaa gcc ctt cgg cgg ctc cat gag ttg gca gag	565	
Glu Lys Lys Gln Glu Lys Ala Leu Arg Arg Leu His Glu Leu Ala Glu		
108 113 118 123		
caa aga aaa caa gct gaa tgt gca cct gga agt ggt ccc atg ttc aaa	613	
Gln Arg Lys Gln Ala Glu Cys Ala Pro Gly Ser Gly Pro Met Phe Lys		
124 129 134 139		
cca acc aca gtg gct gta gat gaa gaa ggt gga gaa gat gat aaa gat	661	
Pro Thr Thr Val Ala Val Asp Glu Glu Gly Gly Glu Asp Asp Lys Asp		
140 145 150 155		
gaa tca gct aca aat agt ggc aca ggt gcc act gct tct tgt ggc ctg	709	
Glu Ser Ala Thr Asn Ser Gly Thr Gly Ala Thr Ala Ser Cys Gly Leu		
156 161 166 171		
gga tct gaa ttc tcc aca gat aaa gga ggc cct ttc act gca gta caa	757	
Gly Ser Glu Phe Ser Thr Asp Lys Gly Gly Pro Phe Thr Ala Val Gln		
172 177 182 187		
atc act aat acc act gga ctg gcc cag gct cct ggg tta gcc tcc caa	805	
Ile Thr Asn Thr Thr Gly Leu Ala Gln Ala Pro Gly Leu Ala Ser Gln		
188 193 198 203		
ggc atc agc ttt ggc att aag aat aat ctg ggg acc cca ttg caa aaa	853	
Gly Ile Ser Phe Gly Ile Lys Asn Asn Leu Gly Thr Pro Leu Gln Lys		
204 209 214 219		
ttg gga gtg tca ttt tct ttt gcc aaa aag gct cct gtc aaa ctc gaa	901	



Leu Gly Val Ser Phe Ser Phe Ala Lys Lys Ala Pro Val Lys Leu Glu	
220 225 230 235	
tca ata gca tca gtt ttc aag gac cat gcg gag gaa ggg acc tct gaa	949
Ser Ile Ala Ser Val Phe Lys Asp His Ala Glu Glu Gly Thr Ser Glu	
236 241 246 251	
gat gga aca aaa ccc gat gag aag agt tct gac caa gga ctg cag aag	997
Asp Gly Thr Lys Pro Asp Glu Lys Ser Ser Asp Gln Gly Leu Gln Lys	
252 257 262 267	
gta gga gac tct gat ggg agc agt aat ctt gat ggt aaa aaa gag gat	1045
Val Gly Asp Ser Asp Gly Ser Ser Asn Leu Asp Gly Lys Lys Glu Asp	
268 273 278 283	
gaa gac cct cag gat gga ggg tcc ctt gcc tca aca tta tcc aaa tta	1093
Glu Asp Pro Gln Asp Gly Gly Ser Leu Ala Ser Thr Leu Ser Lys Leu	
284 289 294 299	
aaa agg atg aaa cga gaa gaa gga gct ggg gct aca gag cct gag tat	1141
Lys Arg Met Lys Arg Glu Glu Gly Ala Gly Ala Thr Glu Pro Glu Tyr	
300 305 310 315	
tac cac tac atc ccc cca gca cac tgc aaa gta aaa cct aat ttt ccc	1189
Tyr His Tyr Ile Pro Pro Ala His Cys Lys Val Lys Pro Asn Phe Pro	
316 321 326 331	
ttt cta ctt ttt atg aga gcc agt gaa caa atg gat ggt gat aat act	1237
Phe Leu Leu Phe Met Arg Ala Ser Glu Gln Met Asp Gly Asp Asn Thr	
332 337 342 347	
aca cac cca aag aat gcc cca gag agt aaa aaa ggc agt tct ccc aag	1285
Thr His Pro Lys Asn Ala Pro Glu Ser Lys Lys Gly Ser Ser Pro Lys	
348 353 358 363	
cct aaa agc tgc atc aag gcg gca gca agc caa gga gca gaa aag aca	1333
Pro Lys Ser Cys Ile Lys Ala Ala Ala Ser Gln Gly Ala Glu Lys Thr	
364 369 374 379	
gtt agt gaa gtc tct gag cag ccg aag gaa acc agc atg acc gag ccc	1381
Val Ser Glu Val Ser Glu Gln Pro Lys Glu Thr Ser Met Thr Glu Pro	
380 385 390 395	
tca gaa cca gga agc aaa gct gag gca aag aag gcc tta gga ggg gat	1429
Ser Glu Pro Gly Ser Lys Ala Glu Ala Lys Lys Ala Leu Gly Gly Asp	
396 401 406 411	
gta agt gat cag agt tta gaa agt cat agt cag aag gtt tca gag acc	1477
Val Ser Asp Gln Ser Leu Glu Ser His Ser Gln Lys Val Ser Glu Thr	
412 417 422 427	
caa atg tgt gag tcc aac tct tct aaa gaa acc tct ctg gcc acc cca	1525
Gln Met Cys Glu Ser Asn Ser Ser Lys Glu Thr Ser Leu Ala Thr Pro	
428 433 438 443	
gca ggg aaa gaa agc caa gaa gga ccc aaa cat cct act ggt ccc ttc	1573
Ala Gly Lys Glu Ser Gln Glu Gly Pro Lys His Pro Thr Gly Pro Phe	

444	449	454	459	
ttc cca gtt ttg agc	aaa gat gaa agc act	gcc ctc cag tgg cca tca		1621
Phe Pro Val Leu Ser	Lys Asp Glu Ser Thr	Ala Leu Gln Trp Pro Ser		
460	465	470	475	
gaa cta tta att ttc	acc aag gca gaa ccc	tcc att tca tac agt tgt		1669
Glu Leu Leu Ile Phe	Thr Lys Ala Glu Pro	Ser Ile Ser Tyr Ser Cys		
476	481	486	491	
aac cct tta tat ttt	gac ttt aaa ctt tca	agg aac aaa gat gcc aga		1717
Asn Pro Leu Tyr Phe	Asp Phe Lys Leu Ser	Arg Asn Lys Asp Ala Arg		
492	497	502	507	
act aaa gga aca gaa	aaa cca aag gat ata	gga agc tcc tca aag gac		1765
Thr Lys Gly Thr Glu	Lys Pro Lys Asp Ile	Gly Ser Ser Ser Lys Asp		
508	513	518	523	
cat ctc caa ggc cta	gat cct ggt gag cca	aat aaa agc aag gaa gtg		1813
His Leu Gln Gly Leu	Asp Pro Gly Glu Pro	Asn Lys Ser Lys Glu Val		
524	529	534	539	
ggc gga gag aaa ata	gta cgt tcc tca gga	ggc aga atg gac gca cct		1861
Gly Gly Glu Lys Ile	Val Arg Ser Ser Gly	Gly Arg Met Asp Ala Pro		
540	545	550	555	
gct tca ggg tct gcc	tgt agc ggc ctg aac	aag cag gag cct ggg ggt		1909
Ala Ser Gly Ser Ala	Cys Ser Gly Leu Asn	Lys Gln Glu Pro Gly Gly		
556	561	566	571	
agc cat ggg tct gag	aca gaa gac aca ggg	aga agc ctt ccc agc aag		1957
Ser His Gly Ser Glu	Thr Glu Asp Thr Gly	Arg Ser Leu Pro Ser Lys		
572	577	582	587	
aaa gaa cga tct ggg	aag tcc cac cgg cac	aaa aag aaa aag aag cac		2005
Lys Glu Arg Ser Gly	Lys Ser His Arg His	Lys Lys Lys Lys Lys His		
588	593	598	603	
aaa aaa tcc agc aaa	cac aaa cgt aaa cac	aag gct gac aca gaa gag		2053
Lys Lys Ser Ser Lys	His Lys Arg Lys His	Lys Ala Asp Thr Glu Glu		
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aaa agc tct aag gca	gag tca ggg gag aaa	tct aag aag cgc aag aaa		2101
Lys Ser Ser Lys Ala	Glu Ser Gly Glu Lys	Ser Lys Lys Arg Lys Lys		
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cga aaa cga aag aag	aat aag tca tca gcc	cca gca gat tct gaa cga		2149
Arg Lys Arg Lys Lys	Asn Lys Ser Ser Ala	Pro Ala Asp Ser Glu Arg		
636	641	646	651	
gga ccc aaa cca gaa	ccc cct ggg agt ggc	agt ccc gca cca cca aga		2197
Gly Pro Lys Pro Glu	Pro Pro Gly Ser Gly	Ser Pro Ala Pro Pro Arg		
652	657	662	667	
aga agg cgg aga gct	caa gat gac tcc cag	cgg aga tcc ctc cca gct		2245
Arg Arg Arg Arg Ala	Gln Asp Asp Ser Gln	Arg Arg Ser Leu Pro Ala		
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Trp	Ile	Gly	Gln	Pro	Pro	Gly	Leu	Asn	Glu	Val	Leu	Ala	Gly	Leu	Glu	
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Thr Ile Ser Lys Ala Val Gln Asn Lys Val Glu Gly Ile Leu Gln Asp
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gta cag aaa ttt tct gac aat gac aag ctg tat ctc tac ctt cag ctc      365
Val Gln Lys Phe Ser Asp Asn Asp Lys Leu Tyr Leu Tyr Leu Gln Leu
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ccc tca gga ccc acc act gga gac aaa agc tca gag cca agt aca ctg      413
Pro Ser Gly Pro Thr Thr Gly Asp Lys Ser Ser Glu Pro Ser Thr Leu
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agc aat gag gag tac atg tat gcc tat agg tgg atc cgc aac cac ctg      461
Ser Asn Glu Glu Tyr Met Tyr Ala Tyr Arg Trp Ile Arg Asn His Leu
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gaa gag cac act gac acc tgt ctg cca aag caa agt gtt tat gat gcc      509
Glu Glu His Thr Asp Thr Cys Leu Pro Lys Gln Ser Val Tyr Asp Ala
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tat cgg aag tac tgt gag agt ctt gcc tgt tgc cgc cca ctc agc aca      557
Tyr Arg Lys Tyr Cys Glu Ser Leu Ala Cys Cys Arg Pro Leu Ser Thr
 117                      122                      127                      132

gcc aac ttt ggc aag atc atc aga gag atc ttc cct gac atc aaa gct      605
Ala Asn Phe Gly Lys Ile Ile Arg Glu Ile Phe Pro Asp Ile Lys Ala
 133                      138                      143                      148

cga agg ctt ggt ggc cgg ggc cag tcc aaa tat tgc tac agt ggc ata      653

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Arg	Arg	Lys	Thr	Leu	Val	Ser	Met	Pro	Pro	Leu	Pro	Gly	Leu	Asp	Leu		
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aag	ggt	tct	gag	agt	cca	gaa	atg	ggc	cca	gaa	gta	acc	cca	gca	cct	749	
Lys	Gly	Ser	Glu	Ser	Pro	Glu	Met	Gly	Pro	Glu	Val	Thr	Pro	Ala	Pro		
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Arg	Asp	Glu	Leu	Val	Glu	Ala	Ala	Cys	Ala	Leu	Thr	Cys	Asp	Trp	Ala		
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gag	cgg	atc	ctg	aaa	cgg	tcc	ttc	agt	tcc	atc	gtt	gag	gtc	gcc	cgc	845	
Glu	Arg	Ile	Leu	Lys	Arg	Ser	Phe	Ser	Ser	Ile	Val	Glu	Val	Ala	Arg		
213					218					223					228		
ttc	ctg	cta	cag	cag	cat	ctc	atc	tct	gcc	cga	tct	gca	cat	gcc	cat	893	
Phe	Leu	Leu	Gln	Gln	His	Leu	Ile	Ser	Ala	Arg	Ser	Ala	His	Ala	His		
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gtg	ctt	aag	gcc	atg	ggg	ctt	gct	gaa	gag	gac	gaa	cat	gca	cct	cgg	941	
Val	Leu	Lys	Ala	Met	Gly	Leu	Ala	Glu	Glu	Asp	Glu	His	Ala	Pro	Arg		
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Glu	Arg	Ser	Ser	Lys	Pro	Lys	Asn	Gly	Leu	Glu	Asn	Pro	Glu	Gly	Gly		
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gcc	cac	aag	aag	cca	gag	aga	ctg	gcc	cag	cct	cct	aag	gat	ctg	gaa	1037	
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Gly Leu Thr Gln Pro Arg Gly Thr Glu Asn Arg Glu Val Gly Ile Gly				
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Gly Asp Gln Gly Pro His Asp Lys Gly Val Lys Arg Thr Ala Glu Val				
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Pro Val Ser Glu Ala Ser Gly Gln Ala Pro Pro Ala Lys Ala Ala Lys				
437	442	447	452	
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Gln Asp Ile Glu Asp Thr Ala Ser Asp Ala Lys Arg Lys Arg Gly Arg				
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Lys Ser Ala Ala Ala Met Glu Ser Ala Gln Ser Ser Arg Leu Pro Trp				
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Arg Pro Gly Pro Met Gly Glu Ala Glu Lys Gly Ala Val Leu Ala Gln				
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Gln His Thr Lys Glu Ala Glu Asp Lys Ile Pro Leu Val Pro Ser Lys				
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Val Ser Val Ile Lys Gly Ser Arg Ser Gln Lys Glu Ala Phe Pro Leu				
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Ala Lys Gly Glu Val Asp Thr Ala Pro Gln Gly Asn Lys Asp Leu Lys				
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Glu His Val Leu Gln Ser Ser Leu Ser Gln Glu His Lys Asp Pro Lys				
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His Thr Thr Ser Gly Arg Ile His Gln Ala Met Val Thr Ser Leu Asn						
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Glu Asp Asn Glu Ser Val Thr Val Glu Trp Ile Glu Asn Gly Asp Thr						
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Lys Gly Lys Glu Ile Asp Leu Glu Ser Ile Phe Ser Leu Asn Pro Asp						
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Gln Glu Leu Arg Glu Lys Arg Ala Gln Asp Val Asp Ala Thr Asn Pro	
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 ctgggctcaa ctgctcctcc cgcctcagcc tccaagtag ctgggactac ag atg 235  
 Met  
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 cac acc aca tcc ggc cga ata cat caa gca atg gta aca tct tta aat 283  
 His Thr Thr Ser Gly Arg Ile His Gln Ala Met Val Thr Ser Leu Asn  
 2 7 12 17  
 gaa gat aat gaa agt gta act gtt gaa tgg ata gaa aat gga gat aca 331  
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 Lys Gly Lys Glu Ile Asp Leu Glu Ser Ile Phe Ser Leu Asn Pro Asp  
 34 39 44 49  
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 Leu Val Pro Asp Glu Glu Ile Glu Pro Ser Pro Glu Thr Pro Pro Pro  
 50 55 60 65  
 cca gca tcc tca gcc aaa gta aac aaa att gta aag aat cga cgg act 475  
 Pro Ala Ser Ser Ala Lys Val Asn Lys Ile Val Lys Asn Arg Arg Thr  
 66 71 76 81  
 gta gct tct att aag aat gac cct cct tca aga gat aat aga gtg gtt 523  
 Val Ala Ser Ile Lys Asn Asp Pro Pro Ser Arg Asp Asn Arg Val Val  
 82 87 92 97  
 ggt tca gca cgt gca cgg ccc agt caa ttt cct gaa cag tct tcc tct 571  
 Gly Ser Ala Arg Ala Arg Pro Ser Gln Phe Pro Glu Gln Ser Ser Ser  
 98 103 108 113  
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 Ala Gln Gln Asn Gly Ser Val Ser Asp Ile Ser Pro Val Gln Ala Ala  
 114 119 124 129  
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 Glu Val Glu Lys Leu Gln Glu Lys Arg Glu Lys Arg Arg Leu Gln Gln

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caa gaa ctt aga gaa	aaa aga gcc cag gac gtt gat gct aca aac cca			763
Gln Glu Leu Arg Glu	Lys Arg Ala Gln Asp Val Asp Ala Thr Asn Pro			
162	167	172	177	
aat tat gaa att atg	tgt atg atc aga gac ttt aga gga agt ttg gat			811
Asn Tyr Glu Ile Met	Cys Met Ile Arg Asp Phe Arg Gly Ser Leu Asp			
178	183	188	193	
tat aga cca tta aca	aca gca gat cct att gat gaa cat agg ata tgt			859
Tyr Arg Pro Leu Thr	Thr Ala Asp Pro Ile Asp Glu His Arg Ile Cys			
194	199	204	209	
gtg tgt gta aga aaa	cga cca ctc aat aaa gaa act caa atg aaa			907
Val Cys Val Arg Lys	Arg Pro Leu Asn Lys Lys Glu Thr Gln Met Lys			
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gat ctt gat gta atc	aca att cct agt aaa gat gtt gtg atg gta cat			955
Asp Leu Asp Val Ile	Thr Ile Pro Ser Lys Asp Val Val Met Val His			
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gaa cca aaa caa aaa	gta gat tta aca agg tac cta gaa aac caa aca			1003
Glu Pro Lys Gln Lys	Val Asp Leu Thr Arg Tyr Leu Glu Asn Gln Thr			
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ttt cgt ttt gat tat	gcc ttt gat gac tca gct cct aat gaa atg gtt			1051
Phe Arg Phe Asp Tyr	Ala Phe Asp Asp Ser Ala Pro Asn Glu Met Val			
258	263	268	273	
tac agg ttt act gct	aga cca cta gtg gaa act ata ttt gaa agg gga			1099
Tyr Arg Phe Thr Ala	Arg Pro Leu Val Glu Thr Ile Phe Glu Arg Gly			
274	279	284	289	
atg gct aca tgc ttt	gct tat ggg cag act gga agt gga aaa act cat			1147
Met Ala Thr Cys Phe	Ala Tyr Gly Gln Thr Gly Ser Gly Lys Thr His			
290	295	300	305	
act atg ggt ggt gac	ttt tca gga aag aac caa gat tgt tct aaa gga			1195
Thr Met Gly Gly Asp	Phe Ser Gly Lys Asn Gln Asp Cys Ser Lys Gly			
306	311	316	321	
att tat gca tta gca	gct cga gat gtc ttt tta atg cta aag aag cca			1243
Ile Tyr Ala Leu Ala	Ala Arg Asp Val Phe Leu Met Leu Lys Lys Pro			
322	327	332	337	
aac tat aag aag cta	gaa ctt caa gta tat gca acc ttc ttt gaa att			1291
Asn Tyr Lys Lys Leu	Glu Leu Gln Val Tyr Ala Thr Phe Phe Glu Ile			
338	343	348	353	
tat agt gga aag gtg	ttt gac ttg cta aac agg aaa aca aaa tta aga			1339
Tyr Ser Gly Lys Val	Phe Asp Leu Leu Asn Arg Lys Thr Lys Leu Arg			
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gtt cta gaa gat gga	aaa cag cag gtt caa gtg gtg gga tta cag gaa			1387
Val Leu Glu Asp Gly	Lys Gln Gln Val Gln Val Val Gly Leu Gln Glu			
370	375	380	385	

cgg gag gtc aaa tgt gtt gaa gat gta ctg aaa ctc att gac ata ggc	1435
Arg Glu Val Lys Cys Val Glu Asp Val Leu Lys Leu Ile Asp Ile Gly	
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Asn Ser Cys Arg Thr Ser Gly Gln Thr Ser Ala Asn Ala His Ser Ser	
402 407 412 417	
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Arg Ser His Ala Val Phe Gln Ile Ile Leu Arg Arg Lys Gly Lys Leu	
418 423 428 433	
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His Gly Lys Phe Ser Leu Ile Asp Leu Ala Gly Asn Glu Arg Gly Ala	
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466 471 476 481	
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Arg Asp Ser Phe Ile Gly Glu Asn Ser Arg Thr Cys Met Ile Ala Thr	
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Ile Ser Pro Gly Met Ala Ser Cys Glu Asn Thr Leu Asn Thr Leu Arg	
514 519 524 529	
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Tyr Ala Asn Arg Val Lys Glu Phe Gly Ile Ser Pro Ser Asp Ile Pro	
530 535 540 545	
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Phe Ser Gln Gly Ser Gly Ser Arg Pro Asp Leu Ser Pro Ser Tyr Glu	
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Tyr Asp Asp Phe Ser Pro Ser Val Thr Arg Val Lys Glu Leu Thr Val	
562 567 572 577	
gat cca act gct gct ggt gat gtt cgt cca ata atg cac cat cca cca	2011
Asp Pro Thr Ala Ala Gly Asp Val Arg Pro Ile Met His His Pro Pro	
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594 599 604 609	

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610 615 620 625	
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Ser Pro Gln Leu Phe Thr Phe His Glu Ala Val Ser Gln Met Val Glu	
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Ile Arg Trp Leu Glu Asp Glu Lys Ala Leu Leu Glu Met Thr Glu Glu	
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674 679 684 689	
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Glu Gln Lys Ile Asp Ile Leu Thr Glu Leu Arg Asp Lys Val Lys Ser	
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Phe Arg Ala Ala Leu Gln Glu Glu Glu Gln Ala Ser Lys Gln Ile Asn	
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 Met Gly Ile Lys Thr Leu Asn  
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 Met Glu Val Lys Asp Pro Asn Met Lys Gly Ala Met Leu Thr Asn Thr  
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 Lys Lys Glu Lys Pro Pro Phe Leu Pro Glu Glu Pro Ser Ser Ser Ser  
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 72 77 82 87

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 Asp Ile Met Thr Asp Ala Val Val Ile Pro Cys Cys Gly Asn Ser Tyr  
 88 93 98 103

tgt gat gaa tgt ata aga aca gca ctc ctg gaa tca gat gag cac aca 448  
 Cys Asp Glu Cys Ile Arg Thr Ala Leu Leu Glu Ser Asp Glu His Thr  
 104 109 114 119

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 Cys Pro Thr Cys His Gln Asn Asp Val Ser Pro Asp Ala Leu Ile Ala  
 120 125 130 135

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 Asn Lys Phe Leu Arg Gln Ala Val Asn Asn Phe Lys Asn Glu Thr Gly  
 136 141 146 151

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 Tyr Thr Lys Arg Leu Arg Lys Gln Leu Pro Pro Pro Pro Pro Ile  
 152 157 162 167

cca cct ccg aga cca ctg att cag agg aac cta caa cct ctg atg aga 640

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Ser	Pro	Ile	Ser	Arg	Gln	Gln	Asp	Pro	Leu	Met	Ile	Pro	Val	Thr	Ser	
184					189					194					199	
tca	tca	act	cac	cca	gct	ccg	tct	ata	tct	tca	tta	act	tct	aat	cag	736
Ser	Ser	Thr	His	Pro	Ala	Pro	Ser	Ile	Ser	Ser	Leu	Thr	Ser	Asn	Gln	
200					205					210					215	
tct	tcc	ttg	gcc	cct	cct	gtg	tct	gga	aat	ccg	tct	tct	gct	cca	gct	784
Ser	Ser	Leu	Ala	Pro	Pro	Val	Ser	Gly	Asn	Pro	Ser	Ser	Ala	Pro	Ala	
216					221					226					231	
cct	gta	cct	gat	ata	act	gca	aca	gta	tcc	ata	tca	gtt	cat	tca	gaa	832
Pro	Val	Pro	Asp	Ile	Thr	Ala	Thr	Val	Ser	Ile	Ser	Val	His	Ser	Glu	
232					237					242					247	
aaa	tca	gat	gga	cct	ttt	cgg	gat	tct	gat	aat	aaa	ata	ttg	cca	gct	880
Lys	Ser	Asp	Gly	Pro	Phe	Arg	Asp	Ser	Asp	Asn	Lys	Ile	Leu	Pro	Ala	
248					253					258					263	
gca	gct	ctt	gca	tca	gag	cac	tca	aag	gga	acc	tcc	tca	att	gca	att	928
Ala	Ala	Leu	Ala	Ser	Glu	His	Ser	Lys	Gly	Thr	Ser	Ser	Ile	Ala	Ile	
264					269					274					279	
acc	gct	ctt	atg	gaa	gag	aag	ggg	tac	cag	gtg	cct	gtt	ctt	gga	acc	976
Thr	Ala	Leu	Met	Glu	Glu	Lys	Gly	Tyr	Gln	Val	Pro	Val	Leu	Gly	Thr	
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Gly	Trp	Glu	His	Ser	Asn	Lys	Leu	Gly	Tyr	Leu	Val	Ser	Pro	Pro	Gln	
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Gln	Ile	Arg	Arg	Gly	Glu	Arg	Ser	Cys	Tyr	Arg	Ser	Ile	Asn	Arg	Gly	
344					349					354					359	
cga	cac	cac	agc	gaa	aga	tca	cag	agg	act	caa	ggc	ccg	tca	cta	cca	1216
Arg	His	His	Ser	Glu	Arg	Ser	Gln	Arg	Thr	Gln	Gly	Pro	Ser	Leu	Pro	
360					365					370					375	
gca	act	cca	gtc	ttt	gta	cct	gtt	cca	cca	cct	cct	ttg	tat	ccg	cct	1264
Ala	Thr	Pro	Val	Phe	Val	Pro	Val	Pro	Pro	Pro	Pro	Leu	Tyr	Pro	Pro	
376					381					386					391	
cct	ccc	cat	aca	ctt	cct	ctc	cct	ccg	ggg	gtt	cct	cct	cca	cag	ttt	1312
Pro	Pro	His	Thr	Leu	Pro	Leu	Pro	Pro	Gly	Val	Pro	Pro	Pro	Gln	Phe	

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Ser Pro Gln Phe Pro Pro Gly Gln Pro Ala Thr Ala Gly Tyr Ser Val							
408		413		418		423	
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Pro Pro Pro Gly Phe Pro Pro Ala Pro Ala Asn Leu Ser Thr Pro Trp							
424		429		434		439	
gta tca tca gga gtg cag aca gct cat tca aat acc atc cca aca aca							1456
Val Ser Ser Gly Val Gln Thr Ala His Ser Asn Thr Ile Pro Thr Thr							
440		445		450		455	
caa gca cca cct ttg tcc agg gaa gaa ttc tat aga gag cag cga cga							1504
Gln Ala Pro Pro Leu Ser Arg Glu Glu Phe Tyr Arg Glu Gln Arg Arg							
456		461		466		471	
cta aaa gaa gag gaa aag aaa aag tcc aag cta gat gag ttt aca aat							1552
Leu Lys Glu Glu Glu Lys Lys Lys Ser Lys Leu Asp Glu Phe Thr Asn							
472		477		482		487	
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Asp Phe Ala Lys Glu Leu Met Glu Tyr Lys Lys Ile Gln Lys Glu Arg							
488		493		498		503	
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Arg Arg Ser Phe Ser Arg Ser Lys Ser Pro Tyr Ser Gly Ser Ser Tyr							
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Ser Arg Ser Ser Tyr Thr Tyr Ser Lys Ser Arg Ser Gly Ser Thr Arg							
520		525		530		535	
tca cgc tct tat tct cga tca ttc agc cgc tca cat tct cgt tcc tat							1744
Ser Arg Ser Tyr Ser Arg Ser Phe Ser Arg Ser His Ser Arg Ser Tyr							
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Ser Arg Ser Pro Pro Tyr Pro Arg Arg Gly Arg Gly Lys Ser Arg Asn							
552		557		562		567	
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Tyr Arg Ser Arg Ser Arg Ser His Gly Tyr His Arg Ser Arg Ser Arg							
568		573		578		583	
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Ser Pro Pro Tyr Arg Arg Tyr His Ser Arg Ser Arg Ser Pro Gln Ala							
584		589		594		599	
ttt agg gga cag tct cct aat aaa cgt aat gta cct caa ggg gaa aca							1936
Phe Arg Gly Gln Ser Pro Asn Lys Arg Asn Val Pro Gln Gly Glu Thr							
600		605		610		615	
gaa cgt gaa tat ttt aat aga tac aga gaa gtt cca cca cca tat gac							1984
Glu Arg Glu Tyr Phe Asn Arg Tyr Arg Glu Val Pro Pro Pro Tyr Asp							
616		621		626		631	

atg aaa gca tat tat ggg aga agt gtt gac ttt aga gac cca ttt gaa	2032
Met Lys Ala Tyr Tyr Gly Arg Ser Val Asp Phe Arg Asp Pro Phe Glu	
632 637 642 647	
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Lys Glu Arg Tyr Arg Glu Trp Glu Arg Lys Tyr Arg Glu Trp Tyr Glu	
648 653 658 663	
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Lys Tyr Tyr Lys Gly Tyr Ala Ala Gly Ala Gln Pro Arg Pro Ser Ala	
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Asn Arg Glu Asn Phe Ser Pro Glu Arg Phe Leu Pro Leu Asn Ile Arg	
680 685 690 695	
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Asn Ser Pro Phe Thr Arg Gly Arg Arg Glu Asp Tyr Val Gly Gly Gln	
696 701 706 711	
agt cat aga agt cga aac ata ggt agc aac tat cca gaa aag ctt tca	2272
Ser His Arg Ser Arg Asn Ile Gly Ser Asn Tyr Pro Glu Lys Leu Ser	
712 717 722 727	
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Ala Arg Asp Gly His Asn Gln Lys Asp Asn Thr Lys Ser Lys Glu Lys	
728 733 738 743	
gag agt gaa aac gct cca gga gat ggt aaa gga aat aag cat aag aaa	2368
Glu Ser Glu Asn Ala Pro Gly Asp Gly Lys Gly Asn Lys His Lys Lys	
744 749 754 759	
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His Arg Leu Arg Arg Lys Gly Glu Glu Ser Glu Gly Phe Leu Asn Pro	
760 765 770 775	
gag tta tta gag act tct agg aaa tca aga gaa cct aca ggt gtt gaa	2464
Glu Leu Leu Glu Thr Ser Arg Lys Ser Arg Glu Pro Thr Gly Val Glu	
776 781 786 791	
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Glu Asn Lys Thr Asp Ser Leu Phe Val Leu Pro Ser Arg Asp Asp Ala	
792 797 802 807	
aca cct gtt aga gat gaa cca atg gat gca gaa tca atc act ttt aaa	2560
Thr Pro Val Arg Asp Glu Pro Met Asp Ala Glu Ser Ile Thr Phe Lys	
808 813 818 823	
tca gtg tct gaa aaa gac aag aga gaa agg gat aaa cca aaa gca aag	2608
Ser Val Ser Glu Lys Asp Lys Arg Glu Arg Asp Lys Pro Lys Ala Lys	
824 829 834 839	
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Gly Asp Lys Thr Lys Arg Lys Asn Asp Gly Ser Ala Val Ser Lys Lys	
840 845 850 855	

gaa aat att gta aaa cct gct aaa gga ccc caa gaa aaa gta gat gga	2704
Glu Asn Ile Val Lys Pro Ala Lys Gly Pro Gln Glu Lys Val Asp Gly	
856 861 866 871	
gaa cgt gag aga tct cct cga tct gaa cct cca att aaa aaa gcc aaa	2752
Glu Arg Glu Arg Ser Pro Arg Ser Glu Pro Pro Ile Lys Lys Ala Lys	
872 877 882 887	
gag gag act ccg aag act gac aat act aaa tca tca tct tcc tct cag	2800
Glu Glu Thr Pro Lys Thr Asp Asn Thr Lys Ser Ser Ser Ser Ser Gln	
888 893 898 903	
aag gat gaa aaa atc act gga acc ccc aga aaa gct cac tct aaa tca	2848
Lys Asp Glu Lys Ile Thr Gly Thr Pro Arg Lys Ala His Ser Lys Ser	
904 909 914 919	
gca aaa gaa cac caa gaa aca aaa cca gtc aaa gag gaa aaa gtg aag	2896
Ala Lys Glu His Gln Glu Thr Lys Pro Val Lys Glu Glu Lys Val Lys	
920 925 930 935	
aag gac tat tcc aaa gat gtc aaa tca gaa aag cta aca act aag gaa	2944
Lys Asp Tyr Ser Lys Asp Val Lys Ser Glu Lys Leu Thr Thr Lys Glu	
936 941 946 951	
gaa aag gcc aag aag cct aat gag aaa aac aaa cca ctt gat aat aag	2992
Glu Lys Ala Lys Lys Pro Asn Glu Lys Asn Lys Pro Leu Asp Asn Lys	
952 957 962 967	
gga gaa aaa aga aaa aga aaa act gaa gaa aaa ggc gta gat aaa gat	3040
Gly Glu Lys Arg Lys Arg Lys Thr Glu Glu Lys Gly Val Asp Lys Asp	
968 973 978 983	
ttt gag tct tct tca atg aaa atc tcg aaa cta gaa gtg act gaa ata	3088
Phe Glu Ser Ser Ser Met Lys Ile Ser Lys Leu Glu Val Thr Glu Ile	
984 989 994 999	
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Val Lys Pro Ser Pro Lys Arg Lys Met Glu Pro Asp Thr Glu Lys Met	
1000 1005 1010 1015	
gat agg acc cct gaa aag gac aaa att tct tta agt gcg cca gcc aaa	3184
Asp Arg Thr Pro Glu Lys Asp Lys Ile Ser Leu Ser Ala Pro Ala Lys	
1016 1021 1026 1031	
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Lys Ile Lys Leu Asn Arg Glu Thr Gly Lys Lys Ile Gly Ser Thr Glu	
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Asn Ile Ser Asn Thr Lys Glu Pro Ser Glu Lys Leu Glu Ser Thr Ser	
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Ser Lys Val Lys Gln Glu Lys Val Lys Gly Lys Val Arg Arg Lys Val	
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Thr Gly Thr Glu Gly Ser Ser Ser Thr Leu Val Asp Tyr Thr Ser Thr	
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agc tca act gga ggc agt cct gtg cgg aaa tct gaa gaa aaa aca gat	3424
Ser Ser Thr Gly Gly Ser Pro Val Arg Lys Ser Glu Glu Lys Thr Asp	
1096 1101 1106 1111	
aca aag cga act gtg att aaa acg atg gaa gaa tat aat aat gac aat	3472
Thr Lys Arg Thr Val Ile Lys Thr Met Glu Glu Tyr Asn Asn Asp Asn	
1112 1117 1122 1127	
acc gcg cca gct gaa gat gtt atc att atg att cag gtt cct caa tcc	3520
Thr Ala Pro Ala Glu Asp Val Ile Ile Met Ile Gln Val Pro Gln Ser	
1128 1133 1138 1143	
aaa tgg gat aaa gat gac ttt gaa tct gaa gaa gaa gat gtt aaa tcc	3568
Lys Trp Asp Lys Asp Asp Phe Glu Ser Glu Glu Glu Asp Val Lys Ser	
1144 1149 1154 1159	
aca cag cct ata tca agt gta gga aaa cct gct agt gtt ata aaa aat	3616
Thr Gln Pro Ile Ser Ser Val Gly Lys Pro Ala Ser Val Ile Lys Asn	
1160 1165 1170 1175	
gtt agt aca aag cca tca aat ata gtc aag tat cct gag aaa gaa agt	3664
Val Ser Thr Lys Pro Ser Asn Ile Val Lys Tyr Pro Glu Lys Glu Ser	
1176 1181 1186 1191	
gag cca tcc gag aaa att cag aaa ttc acc aag gac gtg agc cat gaa	3712
Glu Pro Ser Glu Lys Ile Gln Lys Phe Thr Lys Asp Val Ser His Glu	
1192 1197 1202 1207	
atc ata caa cat gag gtt aaa agt tca aaa aac tct gca tct agt gaa	3760
Ile Ile Gln His Glu Val Lys Ser Ser Lys Asn Ser Ala Ser Ser Glu	
1208 1213 1218 1223	
aaa ggg aaa acc aaa gat cga gat tat tca gtg ttg gaa aag gag aac	3808
Lys Gly Lys Thr Lys Asp Arg Asp Tyr Ser Val Leu Glu Lys Glu Asn	
1224 1229 1234 1239	
cct gaa aag agg aag aac agc act cag cca gag aaa gag agt aat ttg	3856
Pro Glu Lys Arg Lys Asn Ser Thr Gln Pro Glu Lys Glu Ser Asn Leu	
1240 1245 1250 1255	
gac cgt ctg aat gaa caa gga aat ttt aaa agt ctg tct caa tct tcc	3904
Asp Arg Leu Asn Glu Gln Gly Asn Phe Lys Ser Leu Ser Gln Ser Ser	
1256 1261 1266 1271	
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Lys Glu Ala Arg Thr Val Arg *	
1272 1277	
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caaacgtaga gatgaaaaga atgaattaac aagacgaaaa gactctccct tctcggaat	4078
aaagattctg gcattctggga ccaggaaaaa taaacccaag gggaagaaga gagatttgnc	4138

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 ggtgacagct gggtcgggtc cgtcgcgggc tgcctggggg gcgaggatcg cgcaccccgct 180  
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 tctgactccc tggcccctga cacggctgca cttccatcc cgtcgcgggg ccggccgcta 360  
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                   1                  5                  10  
 ctg gaa gtg gct gag tac ctg acc ccg gtc ctc aag gaa tca aag ttt 457  
 Leu Glu Val Ala Glu Tyr Leu Thr Pro Val Leu Lys Glu Ser Lys Phe  
   13                  18                  23                  28  
 aag gaa aca ggt gta att acc cca gaa gag ttt gtg gca gct gga gat 505  
 Lys Glu Thr Gly Val Ile Thr Pro Glu Glu Phe Val Ala Ala Gly Asp  
   29                  34                  39                  44  
 cac cta gtc cac cac tgt cca aca tgg caa tgg gct aca ggg gaa gaa 553  
 His Leu Val His His Cys Pro Thr Trp Gln Trp Ala Thr Gly Glu Glu  
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 ttg aaa gtg aag gca tac cta cca aca ggc aaa caa ttt ttg gta acc 601  
 Leu Lys Val Lys Ala Tyr Leu Pro Thr Gly Lys Gln Phe Leu Val Thr  
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 aaa aat gtg ccg tgc tat aag cgg tgc aaa cag atg gaa tat tca gat 649  
 Lys Asn Val Pro Cys Tyr Lys Arg Cys Lys Gln Met Glu Tyr Ser Asp  
   77                  82                  87                  92  
 gaa ttg gaa gct atc att gaa gaa gat gat ggt gat ggc gga tgg gta 697  
 Glu Leu Glu Ala Ile Ile Glu Glu Asp Asp Gly Asp Gly Gly Trp Val  
   93                  98                  103                  108



gat aca tat cac aac aca ggt att aca gga ata acg gaa gcc gtt aaa	745
Asp Thr Tyr His Asn Thr Gly Ile Thr Gly Ile Thr Glu Ala Val Lys	
109 114 119 124	
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Glu Ile Thr Leu Glu Asn Lys Asp Asn Ile Arg Leu Gln Asp Cys Ser	
125 130 135 140	
gca cta tgt gaa gag gaa gaa gat gaa gat gaa gga gaa gct gca gat	841
Ala Leu Cys Glu Glu Glu Glu Asp Glu Asp Glu Gly Glu Ala Ala Asp	
141 146 151 156	
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Met Glu Glu Tyr Glu Glu Ser Gly Leu Leu Glu Thr Asp Glu Ala Thr	
157 162 167 172	
cta gat aca agg aaa ata gta gaa gct tgt aaa gcc aaa act gat gct	937
Leu Asp Thr Arg Lys Ile Val Glu Ala Cys Lys Ala Lys Thr Asp Ala	
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Gly Gly Glu Asp Ala Ile Leu Gln Thr Arg Thr Tyr Asp Leu Tyr Ile	
189 194 199 204	
act tat gat aaa tat tac cag act cca cga tta tgg ttg ttt ggc tat	1033
Thr Tyr Asp Lys Tyr Tyr Gln Thr Pro Arg Leu Trp Leu Phe Gly Tyr	
205 210 215 220	
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Asp Glu Gln Arg Gln Pro Leu Thr Val Glu His Met Tyr Glu Asp Ile	
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Ser Gln Asp His Val Lys Lys Thr Val Thr Ile Glu Asn His Pro His	
237 242 247 252	
ctg cca cca cct ccc atg tgt tca gtt cac cca tgc agg cat gct gag	1177
Leu Pro Pro Pro Pro Met Cys Ser Val His Pro Cys Arg His Ala Glu	
253 258 263 268	
gtg atg aag aaa atc att gag act gtt gca gaa gga ggg gga gaa ctt	1225
Val Met Lys Lys Ile Ile Glu Thr Val Ala Glu Gly Gly Gly Glu Leu	
269 274 279 284	
gga gtt cat atg tat ctt ctt att ttc ttg aaa ttt gta caa gct gtc	1273
Gly Val His Met Tyr Leu Leu Ile Phe Leu Lys Phe Val Gln Ala Val	
285 290 295 300	
att cca aca ata gaa tat gac tac aca aga cac ttc aca atg taa tga	1321
Ile Pro Thr Ile Glu Tyr Asp Tyr Thr Arg His Phe Thr Met *	
301 306 311	
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gtgaccattg accatattca tcaatatata cagtttctct aataaggac ttatatgttt	1441
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1522

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taaaaatggc gaaatggggg taggcggcgc tggacctgaa gagatggggc ggcaggtgg 180  
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acctcgggcc ggcgctaag aggtcagact gcggagcqtg cgggtcgcca gcggccccgc 300  
cgagagccgg aggca atg gat gaa cag agc gtg gag agc att gct gag gtt 351  
Met Asp Glu Gln Ser Val Glu Ser Ile Ala Glu Val  
1 5 10  
ttc cga tgt ttc att tgt atg gag aaa ttg cgg gat gca cgc ctg tgt 399  
Phe Arg Cys Phe Ile Cys Met Glu Lys Leu Arg Asp Ala Arg Leu Cys  
13 18 23 28  
cct cat tgc tcc aaa ctg tgt tgt ttc agc tgt att agg cgc tgg ctg 447  
Pro His Cys Ser Lys Leu Cys Cys Phe Ser Cys Ile Arg Arg Trp Leu  
29 34 39 44  
aca gag cag aga gct caa tgt cct cat tgc cgt gct cca ctc cag cta 495  
Thr Glu Gln Arg Ala Gln Cys Pro His Cys Arg Ala Pro Leu Gln Leu  
45 50 55 60  
cga gaa cta gta aat tgt cgt tgg gca gaa gaa gta aca caa cag ctt 543  
Arg Glu Leu Val Asn Cys Arg Trp Ala Glu Glu Val Thr Gln Gln Leu  
61 66 71 76  
gat act ctt caa ctc tgc agt ctc acc aaa cat gaa gaa aat gaa aag 591  
Asp Thr Leu Gln Leu Cys Ser Leu Thr Lys His Glu Glu Asn Glu Lys  
77 82 87 92  
gac aaa tgt gaa aat cac cat gaa aaa ctt agt gta ttt tgc tgg act 639  
Asp Lys Cys Glu Asn His His Glu Lys Leu Ser Val Phe Cys Trp Thr  
93 98 103 108  
tgt aag aag tgt atc tgc cat cag tgt gca ctt tgg gga gga atg cat 687  
Cys Lys Lys Cys Ile Cys His Gln Cys Ala Leu Trp Gly Gly Met His  
109 114 119 124

ggc gga cat acc ttt aaa cct ttg gca gaa att tat gag caa cac gtc	735
Gly Gly His Thr Phe Lys Pro Leu Ala Glu Ile Tyr Glu Gln His Val	
125 130 135 140	
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Thr Lys Val Asn Glu Glu Val Ala Lys Leu Arg Arg Arg Leu Met Glu	
141 146 151 156	
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Leu Ile Ser Leu Val Gln Glu Val Glu Arg Asn Val Glu Ala Val Arg	
157 162 167 172	
aat gca aaa gat gag cgt gtt cgg gaa att agg aat gca gtg gag atg	879
Asn Ala Lys Asp Glu Arg Val Arg Glu Ile Arg Asn Ala Val Glu Met	
173 178 183 188	
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Met Ile Ala Arg Leu Asp Thr Gln Leu Lys Asn Lys Leu Ile Thr Leu	
189 194 199 204	
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Met Gly Gln Lys Thr Ser Leu Thr Gln Glu Thr Glu Leu Leu Glu Ser	
205 210 215 220	
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221 226 231 236	
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Leu Ile Ser Lys Ser Ser Glu Ile Leu Met Met Phe Gln Gln Val His	
237 242 247 252	
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Arg Lys Pro Met Ala Ser Phe Val Thr Thr Pro Val Pro Pro Asp Phe	
253 258 263 268	
acc agt gaa tta gtg cca tct tac gat tca gct act ttt gtt tta gag	1167
Thr Ser Glu Leu Val Pro Ser Tyr Asp Ser Ala Thr Phe Val Leu Glu	
269 274 279 284	
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Asn Phe Ser Thr Leu Arg Gln Arg Ala Asp Pro Val Tyr Ser Pro Pro	
285 290 295 300	
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301 306 311 316	
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Asn Gly Val Val Arg Gly Tyr Tyr Leu Ser Val Phe Leu Glu Leu Ser	
317 322 327 332	
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333 338 343 348	

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Ser	Asp	Phe	Glu	Val	Gly	Glu	Cys	Trp	Gly	Tyr	Asn	Arg	Phe	Phe	Arg	
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Leu	Asp	Leu	Leu	Ala	Asn	Glu	Gly	Tyr	Leu	Asn	Pro	Gln	Asn	Asp	Thr	
381					386					391					396	
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Val	Ile	Leu	Arg	Phe	Gln	Val	Arg	Ser	Pro	Thr	Phe	Phe	Gln	Lys	Ser	
397					402					407					412	
cgg	gac	cag	cat	tgg	tac	att	act	cag	ttg	gaa	gct	gca	cag	act	agt	1599
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413					418					423					428	
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Tyr	Ile	Gln	Gln	Ile	Asn	Asn	Leu	Lys	Glu	Arg	Leu	Thr	Ile	Glu	Leu	
429					434					439					444	
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Ser	Arg	Thr	Gln	Lys	Ser	Arg	Asp	Leu	Ser	Pro	Pro	Asp	Asn	His	Leu	
445					450					455					460	
agc	ccc	caa	aat	gat	gat	gct	ctg	gag	aca	cga	gct	aag	aag	tct	gca	1743
Ser	Pro	Gln	Asn	Asp	Asp	Ala	Leu	Glu	Thr	Arg	Ala	Lys	Lys	Ser	Ala	
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Cys	Ser	Asp	Met	Leu	Leu	Glu	Gly	Gly	Pro	Thr	Thr	Ala	Ser	Val	Arg	
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Tyr	His	His	Glu	Leu	Ser	Asp	Gly	Asp	Leu	Asp	Leu	Asp	Leu	Val	Tyr	
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525					530					535					540	
aca	gca	aca	agt	aat	aca	gaa	gaa	aat	gat	att	gat	gaa	gaa	act	atg	1983
Thr	Ala	Thr	Ser	Asn	Thr	Glu	Glu	Asn	Asp	Ile	Asp	Glu	Glu	Thr	Met	
541					546					551					556	
tct	gga	gaa	aat	gat	gtg	gaa	tat	aac	aac	atg	gaa	tta	gaa	gag	gga	2031
Ser	Gly	Glu	Asn	Asp	Val	Glu	Tyr	Asn	Asn	Met	Glu	Leu	Glu	Glu	Gly	
557	/				562					567					572	
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Glu	Leu	Met	Glu	Asp	Ala	Ala	Ala	Ala	Gly	Pro	Ala	Gly	Ser	Ser	His	
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Gly	Tyr	Val	Gly	Ser	Ser	Ser	Arg	Ile	Ser	Arg	Arg	Thr	His	Leu	Cys	
589					594					599					604	
tcc	gct	gct	acc	agt	agt	tta	cta	gac	att	gat	cca	tta	att	tta	ata	2175
Ser	Ala	Ala	Thr	Ser	Ser	Leu	Leu	Asp	Ile	Asp	Pro	Leu	Ile	Leu	Ile	
605					610					615					620	
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His	Leu	Leu	Asp	Leu	Lys	Asp	Arg	Ser	Ser	Ile	Glu	Asn	Leu	Trp	Gly	
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tta	cag	cct	cgc	cca	cct	gct	tca	ctt	ctg	cag	ccc	aca	gca	tca	tat	2271
Leu	Gln	Pro	Arg	Pro	Pro	Ala	Ser	Leu	Leu	Gln	Pro	Thr	Ala	Ser	Tyr	
637					642					647					652	
tct	cga	aaa	gat	aaa	gac	caa	agg	aag	caa	cag	gca	atg	tgg	cga	gtg	2319
Ser	Arg	Lys	Asp	Lys	Asp	Gln	Arg	Lys	Gln	Gln	Ala	Met	Trp	Arg	Val	
653					658					663					668	
ccc	tct	gat	tta	aag	atg	cta	aaa	aga	ctc	aaa	act	caa	atg	gcc	gaa	2367
Pro	Ser	Asp	Leu	Lys	Met	Leu	Lys	Arg	Leu	Lys	Thr	Gln	Met	Ala	Glu	
669					674					679					684	
gtt	cga	tgt	atg	aaa	act	gat	gta	aag	aat	aca	ctt	tca	gaa	ata	aaa	2415
Val	Arg	Cys	Met	Lys	Thr	Asp	Val	Lys	Asn	Thr	Leu	Ser	Glu	Ile	Lys	
685					690					695					700	
agc	agc	agt	gct	gct	tct	gga	gac	atg	cag	aca	agc	ctt	ttt	tct	gct	2463
Ser	Ser	Ser	Ala	Ala	Ser	Gly	Asp	Met	Gln	Thr	Ser	Leu	Phe	Ser	Ala	
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Asp	Gln	Ala	Ala	Leu	Ala	Ala	Cys	Gly	Thr	Glu	Asn	Ser	Gly	Arg	Leu	
717					722					727					732	
cag	gat	ttg	gga	atg	gaa	ctc	ctg	gca	aag	tca	tca	gtt	gcc	aat	tgt	2559
Gln	Asp	Leu	Gly	Met	Glu	Leu	Leu	Ala	Lys	Ser	Ser	Val	Ala	Asn	Cys	
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Leu Ile His Gly Ser Ile Gly Asp Ile Leu Pro Lys Thr Glu Asp Arg				
813	818	823	828	
cag tgt aaa gct ttg gat tca gat gct gtt gtg gtt gca gtt ttc agt				2847
Gln Cys Lys Ala Leu Asp Ser Asp Ala Val Val Val Ala Val Phe Ser				
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Gly Leu Pro Ala Val Glu Lys Arg Arg Lys Met Val Thr Leu Gly Ala				
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Asn Ala Lys Gly Gly His Leu Glu Gly Leu Gln Met Thr Asp Leu Glu				
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Asn Asn Ser Glu Thr Gly Glu Leu Gln Pro Val Leu Pro Glu Gly Ala				
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Ser Ala Ala Pro Glu Glu Gly Met Ser Ser Asp Ser Asp Ile Glu Cys				
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Asp Thr Glu Asn Glu Glu Gln Glu Glu His Thr Ser Val Gly Gly Phe				
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Met Thr Met Tyr Leu Trp Leu Lys Leu	
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Leu Ala Phe Gly Phe Ala Phe Leu Asp Thr Glu Val Phe Val Thr Gly	
10 15 / 20 25	
caa agc cca aca cct tcc ccc act gat gcc tac ctt aat gcc tct gaa	448

Gln	Ser	Pro	Thr	Pro	Ser	Pro	Thr	Asp	Ala	Tyr	Leu	Asn	Ala	Ser	Glu	
26					31					36					41	
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Thr	Thr	Thr	Leu	Ser	Pro	Ser	Gly	Ser	Ala	Val	Ile	Ser	Thr	Thr	Thr	
42					47					52					57	
ata	gct	act	act	cca	tct	aag	cca	aca	tgt	gat	gaa	aaa	tat	gca	aac	544
Ile	Ala	Thr	Thr	Pro	Ser	Lys	Pro	Thr	Cys	Asp	Glu	Lys	Tyr	Ala	Asn	
58					63					68					73	
atc	act	gtg	gat	tac	tta	tat	aac	aag	gaa	act	aaa	tta	ttt	aca	gca	592
Ile	Thr	Val	Asp	Tyr	Leu	Tyr	Asn	Lys	Glu	Thr	Lys	Leu	Phe	Thr	Ala	
74					79					84					89	
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Lys	Leu	Asn	Val	Asn	Glu	Asn	Val	Glu	Cys	Gly	Asn	Asn	Thr	Cys	Thr	
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Asn	Asn	Glu	Val	His	Asn	Leu	Thr	Glu	Cys	Lys	Asn	Ala	Ser	Val	Ser	
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Val	Pro	Pro	Gly	Val	Glu	Lys	Phe	Gln	Leu	His	Asp	Cys	Thr	Gln	Val	
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Glu	Lys	Ala	Asp	Thr	Thr	Ile	Cys	Leu	Lys	Trp	Lys	Asn	Ile	Glu	Thr	
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Phe	Thr	Cys	Asp	Thr	Gln	Asn	Ile	Thr	Tyr	Arg	Phe	Gln	Cys	Gly	Asn	
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Met	Ile	Phe	Asp	Asn	Lys	Glu	Ile	Lys	Leu	Glu	Asn	Leu	Glu	Pro	Glu	
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His	Glu	Tyr	Lys	Cys	Asp	Ser	Glu	Ile	Leu	Tyr	Asn	Asn	His	Lys	Phe	
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Pro	Gln	Ile	Ile	Phe	Cys	Arg	Ser	Glu	Ala	Ala	His	Gln	Gly	Val	Ile	
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acc	tgg	aat	ccc	cct	caa	aga	tca	ttt	cat	aat	ttt	acc	ctc	tgt	tat	1120
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Ile Lys Glu Thr Glu Lys Asp Cys Leu Asn Leu Asp Lys Asn Leu Ile				
266	271	276	281	
aaa tat gat ttg caa aat tta aaa cct tat acg aaa tat gtt tta tca				1216
Lys Tyr Asp Leu Gln Asn Leu Lys Pro Tyr Thr Lys Tyr Val Leu Ser				
282	287	292	297	
tta cat gcc tac atc att gca aaa gtg caa cgt aat gga agt gct gca				1264
Leu His Ala Tyr Ile Ile Ala Lys Val Gln Arg Asn Gly Ser Ala Ala				
298	303	308	313	
atg tgt cat ttc aca act aaa agt gct cct cca agc cag gtc tgg aac				1312
Met Cys His Phe Thr Thr Lys Ser Ala Pro Pro Ser Gln Val Trp Asn				
314	319	324	329	
atg act gtc tcc atg aca tca gat aat agt atg cat gtc aag tgt agg				1360
Met Thr Val Ser Met Thr Ser Asp Asn Ser Met His Val Lys Cys Arg				
330	335	340	345	
cct ccc agg gac cgt aat ggc ccc cat gaa cgt tac cat ttg gaa gtt				1408
Pro Pro Arg Asp Arg Asn Gly Pro His Glu Arg Tyr His Leu Glu Val				
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gaa gct gga aat act ctg gtt aga aat gag tcg cat aag aat tgc gat				1456
Glu Ala Gly Asn Thr Leu Val Arg Asn Glu Ser His Lys Asn Cys Asp				
362	367	372	377	
ttc cgt gta aaa gat ctt caa tat tca aca gac tac act ttt aag gcc				1504
Phe Arg Val Lys Asp Leu Gln Tyr Ser Thr Asp Tyr Thr Phe Lys Ala				
378	383	388	393	
tat ttt cac aat gga gac tat cct gga gaa ccc ttt att tta cat cat				1552
Tyr Phe His Asn Gly Asp Tyr Pro Gly Glu Pro Phe Ile Leu His His				
394	399	404	409	
tca aca tct tat aat tct aag gca ctg ata gca ttt ctg gca ttt ctg				1600
Ser Thr Ser Tyr Asn Ser Lys Ala Leu Ile Ala Phe Leu Ala Phe Leu				
410	415	420	425	
att att gtg aca tca ata gcc ctg ctt gtt gtt ctc tac aaa atc tat				1648
Ile Ile Val Thr Ser Ile Ala Leu Leu Val Val Leu Tyr Lys Ile Tyr				
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gat cta cat aag aaa aga tcc tgc aat tta gat gaa cag cag gag ctt				1696
Asp Leu His Lys Lys Arg Ser Cys Asn Leu Asp Glu Gln Gln Glu Leu				
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gtt gaa agg gat gat gaa aaa caa ctg atg aat gtg gag cca atc cat				1744
Val Glu Arg Asp Asp Glu Lys Gln Leu Met Asn Val Glu Pro Ile His				
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Ala Asp Ile Leu Leu Glu Thr Tyr Lys Arg Lys Ile Ala Asp Glu Gly				
474	479	484	489	

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Arg Leu Phe Leu Ala Glu Phe Gln Ser Ile Pro Arg Val Phe Ser Lys	
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Val Ile Val Met Val Thr Arg Cys Glu Glu Gly Asn Arg Asn Lys Cys	
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Val Val Val Lys Ile Asn Gln His Lys Arg Cys Pro Asp Tyr Ile Ile	
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Gln Lys Leu Asn Ile Val Lys Lys Lys Lys Lys Ser Asn Trp Lys Arg	
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cgc	ctg	gtg	gat	gca	gcc	aag	gcc	ctg	aac	ctg	gtg	cac	tgc	cac	tgc	722	
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Ile	Thr	Pro	Lys	Arg	Leu	Glu	Tyr	Thr	Arg	Lys	Lys	Glu	Asn	Glu	Leu		
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Tyr	Glu	Ser	Leu	Met	Asn	Ile	Ala	Asn	Arg	Lys	Gln	Glu	Glu	Met	Lys		
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Ser	Ser	Val	Asp	Tyr	Leu	Arg	Glu	Ser	Phe	Val	Gly	Thr	Leu	Glu	Arg		
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Cys	Leu	Gln	Ser	Leu	Glu	Lys	Ser	Gln	Asp	Val	Ser	Val	His	Ile	Thr		
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Thr Phe His Ser Gly Ser Ser Val Thr Arg Met Leu Trp Glu Gln Ile				
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Lys Gln Ile Ile Gln Arg Ile Thr Trp Val Ser Pro Pro Ala Ile Thr				
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443 448 453 458	
agc ctt cat att cat gct tcc tac agc atc tcc cag aaa ctg aat gtt	1443
Ser Leu His Ile His Ala Ser Tyr Ser Ile Ser Gln Lys Leu Asn Val	
459 464 469 474	
cca atg gcc cca ctc tca gag ccg aat gcc gta ggc att gtc att gct	1491
Pro Met Ala Pro Leu Ser Glu Pro Asn Ala Val Gly Ile Val Ile Ala	
475 480 485 490	
cat ggt agc gtg ggg gat gcc atc tca gtg atg gtt cca gat gtg tac	1539
His Gly Ser Val Gly Asp Ala Ile Ser Val Met Val Pro Asp Val Tyr	
491 496 501 506	
atc tca gat gat ggg ggt tac tcc tgg aca aag atg ctg gaa gga ccc	1587
Ile Ser Asp Asp Gly Gly Tyr Ser Trp Thr Lys Met Leu Glu Gly Pro	
507 512 517 522	
cac tat tac acc atc ctg gat tct gga ggc atc att gtg gcc att gag	1635
His Tyr Tyr Thr Ile Leu Asp Ser Gly Gly Ile Ile Val Ala Ile Glu	

523	528	533	538	
cac agc agc cgt cct atc aat gtg att aag ttc tcc aca gac gaa ggt				1683
His Ser Ser Arg Pro Ile Asn Val Ile Lys Phe Ser Thr Asp Glu Gly				
539	544	549	554	
caa tgc tgg caa acc tac acg ttc acc agg gac ccc atc tat ttc act				1731
Gln Cys Trp Gln Thr Tyr Thr Phe Thr Arg Asp Pro Ile Tyr Phe Thr				
555	560	565	570	
ggc cta gct tca gaa cct gga gct agg tcc atg aat atc agc att tgg				1779
Gly Leu Ala Ser Glu Pro Gly Ala Arg Ser Met Asn Ile Ser Ile Trp				
571	576	581	586	
ggc ttc aca gaa tct ttc ctg acc agc cag tgg gtc tcc tac acc att				1827
Gly Phe Thr Glu Ser Phe Leu Thr Ser Gln Trp Val Ser Tyr Thr Ile				
587	592	597	602	
gat ttt aaa gat atc ctt gaa agg aac tgt gaa gag aag gac tat acc				1875
Asp Phe Lys Asp Ile Leu Glu Arg Asn Cys Glu Glu Lys Asp Tyr Thr				
603	608	613	618	
ata tgg ctg gca cac tcc aca gac cct gaa gat tat gaa gat ggc tgc				1923
Ile Trp Leu Ala His Ser Thr Asp Pro Glu Asp Tyr Glu Asp Gly Cys				
619	624	629	634	
att ttg ggc tac aaa gaa cag ttt ctg cgg cta cgc aag tca tcc gtg				1971
Ile Leu Gly Tyr Lys Glu Gln Phe Leu Arg Leu Arg Lys Ser Ser Val				
635	640	645	650	
tgt cag aat ggt cga gac tat gtt gtg acc aag cag ccc tcc atc tgc				2019
Cys Gln Asn Gly Arg Asp Tyr Val Val Thr Lys Gln Pro Ser Ile Cys				
651	656	661	666	
ctc tgt tcc ctg gag gac ttt ctc tgt gat ttt ggc tac tac cgt cca				2067
Leu Cys Ser Leu Glu Asp Phe Leu Cys Asp Phe Gly Tyr Tyr Arg Pro				
667	672	677	682	
gaa aat gac tcc aag tgt gtg gaa cag cca gaa ctg aag ggc cac gac				2115
Glu Asn Asp Ser Lys Cys Val Glu Gln Pro Glu Leu Lys Gly His Asp				
683	688	693	698	
ctg gag ttt tgt ctg tac gga aga gaa gaa cac cta aca aca aat ggg				2163
Leu Glu Phe Cys Leu Tyr Gly Arg Glu Glu His Leu Thr Thr Asn Gly				
699	704	709	714	
tac cgg aaa att cca ggg gac aaa tgc cag ggt ggg gta aat cca gtt				2211
Tyr Arg Lys Ile Pro Gly Asp Lys Cys Gln Gly Gly Val Asn Pro Val				
715	720	725	730	
cga gaa gta aaa gac ttg aaa aag aaa tgc aca agc aac ttt ttg agt				2259
Arg Glu Val Lys Asp Leu Lys Lys Lys Cys Thr Ser Asn Phe Leu Ser				
731	736	741	746	
ccg gaa aaa cag aat tcc aag tca aat tct gtt cca att atc ctg gcc				2307
Pro Glu Lys Gln Asn Ser Lys Ser Asn Ser Val Pro Ile Ile Leu Ala				
747	752	757	762	

atc gtg gga ttg atg ctg gtc aca gtc gta gca gga gtg ctc att gtg Ile Val Gly Leu Met Leu Val Thr Val Val Ala Gly Val Leu Ile Val 763 768 773 778	2355
aag aaa tat gtc tgt ggg gga agg ttc ctg gtg cat cga tac tct gtg Lys Lys Tyr Val Cys Gly Gly Arg Phe Leu Val His Arg Tyr Ser Val 779 784 789 794	2403
ctg cag cag cat gca gag gcc aat ggt gtg gat ggt gtg gat gct ttg Leu Gln Gln His Ala Glu Ala Asn Gly Val Asp Gly Val Asp Ala Leu 795 800 805 810	2451
gac aca gcc tcc cac act aat aaa agt ggt tat cat gat gac tca gat Asp Thr Ala Ser His Thr Asn Lys Ser Gly Tyr His Asp Asp Ser Asp 811 816 821 826	2499
gag gac ctc ttg gaa tag ctcttc agaggagctg gaccagcat ggatggtgga Glu Asp Leu Leu Glu * 827 832	2553
accacagtac ctcttacact ccctgtggct ccaacttcag gaaataaatt tcccattgcg	2613
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gggagaagca at atg tta agg ata cct gta aga aag gcc tta gta ggc 168  
Met Leu Arg Ile Pro Val Arg Lys Ala Leu Val Gly  
1 5 10  
ctt tct aag tct cct aaa gga tgt gtt cga aca act gcc aca gca gca 216  
Leu Ser Lys Ser Pro Lys Gly Cys Val Arg Thr Thr Ala Thr Ala Ala  
13 18 23 28  
agc aac ttg att gaa gta ttt gtt gat ggt cag tct gtc atg gtg gaa 264  
Ser Asn Leu Ile Glu Val Phe Val Asp Gly Gln Ser Val Met Val Glu  
29 34 39 44  
ccg gga acg acc gtc ctc caa gct tgt gag aag gtt ggc atg cag atc 312  
Pro Gly Thr Thr Val Leu Gln Ala Cys Glu Lys Val Gly Met Gln Ile  
45 50 55 60  
cct cga ttc tgt tat cat gaa agg ttg tct gtt gct gga aac tgc agg 360  
Pro Arg Phe Cys Tyr His Glu Arg Leu Ser Val Ala Gly Asn Cys Arg  
61 66 71 76  
atg tgc ctt gtt gaa att gag aaa gcc cct aag gtt gta gct gct tgt 408  
Met Cys Leu Val Glu Ile Glu Lys Ala Pro Lys Val Val Ala Ala Cys  
77 82 87 92  
gcc atg cca gta atg aag ggt tgg aat atc cta aca aac tca gaa aaa 456  
Ala Met Pro Val Met Lys Gly Trp Asn Ile Leu Thr Asn Ser Glu Lys  
93 98 103 108  
tcc aaa aaa gcc agg gaa ggt gtg atg gag ttc tta tta gca aat cac 504  
Ser Lys Lys Ala Arg Glu Gly Val Met Glu Phe Leu Leu Ala Asn His  
109 114 119 124  
cca ttg gac tgt cct att tgt gac cag gga ggt gaa tgt gat ctg cag 552  
Pro Leu Asp Cys Pro Ile Cys Asp Gln Gly Gly Glu Cys Asp Leu Gln  
125 130 135 140

gac cag tcc atg atg ttt gga aat gat agg agc cga ttt tta gag ggg	600
Asp Gln Ser Met Met Phe Gly Asn Asp Arg Ser Arg Phe Leu Glu Gly	
141 146 151 156	
aag cgt gct gtg gaa gac aag aac att ggg cca ttg gta aag acc atc	648
Lys Arg Ala Val Glu Asp Lys Asn Ile Gly Pro Leu Val Lys Thr Ile	
157 162 167 172	
atg aca aga tgt ata cag tgt act cgc tgc atc agg ttt gca agt gag	696
Met Thr Arg Cys Ile Gln Cys Thr Arg Cys Ile Arg Phe Ala Ser Glu	
173 178 183 188	
att gca gga gta gat gat ttg gga aca aca ggc aga gga aat gat atg	744
Ile Ala Gly Val Asp Asp Leu Gly Thr Thr Gly Arg Gly Asn Asp Met	
189 194 199 204	
caa gtt ggc aca tac att gaa aag atg ttc atg tct gaa ctg tct ggg	792
Gln Val Gly Thr Tyr Ile Glu Lys Met Phe Met Ser Glu Leu Ser Gly	
205 210 215 220	
aat atc att gat atc tgc cct gta ggt gcc cta acc tct aag ccc tat	840
Asn Ile Ile Asp Ile Cys Pro Val Gly Ala Leu Thr Ser Lys Pro Tyr	
221 226 231 236	
gcc ttt act gcc cgg cct tgg gaa aca aga aag aca gaa tcc att gat	888
Ala Phe Thr Ala Arg Pro Trp Glu Thr Arg Lys Thr Glu Ser Ile Asp	
237 242 247 252	
gta atg gat gcg gtt gga agt aat att gtg gtt agc aca aga act gga	936
Val Met Asp Ala Val Gly Ser Asn Ile Val Val Ser Thr Arg Thr Gly	
253 258 263 268	
gaa gtg atg agg att ttg cca cgt atg cat gag gac atc aat gaa gag	984
Glu Val Met Arg Ile Leu Pro Arg Met His Glu Asp Ile Asn Glu Glu	
269 274 279 284	
tgg atc tct gat aaa acc aga ttt gcc tat gat ggg cta aaa cgt caa	1032
Trp Ile Ser Asp Lys Thr Arg Phe Ala Tyr Asp Gly Leu Lys Arg Gln	
285 290 295 300	
aga ctt acc gag cca atg gtc aga aat gaa aaa ggg ctt tta acc tat	1080
Arg Leu Thr Glu Pro Met Val Arg Asn Glu Lys Gly Leu Leu Thr Tyr	
301 306 311 316	
act tct tgg gag gat gcg ctc tct cgc gta gct gga atg ttg cag agt	1128
Thr Ser Trp Glu Asp Ala Leu Ser Arg Val Ala Gly Met Leu Gln Ser	
317 322 327 332	
ttt caa ggc aaa gat gtg gca gca att gca ggt ggc ttg gtg gat gct	1176
Phe Gln Gly Lys Asp Val Ala Ala Ile Ala Gly Gly Leu Val Asp Ala	
333 338 343 348	
gaa gcc ctg gta gct ctc aaa gat ttg ctt aat aga gtg gac tct gac	1224
Glu Ala Leu Val Ala Leu Lys Asp Leu Leu Asn Arg Val Asp Ser Asp	
349 354 359 364	
acc tta tgc act gaa gag gtc ttc ccc act gca gga gct ggc aca gat	1272



Thr Leu Cys Thr Glu Glu Val Phe Pro Thr Ala Gly Ala Gly Thr Asp	
365 370 375 380	
ttg cgt tcc aat tat ctt ctt aat act aca att gct ggt gtg gaa gag	1320
Leu Arg Ser Asn Tyr Leu Leu Asn Thr Thr Ile Ala Gly Val Glu Glu	
381 386 391 396	
gca gat gtt gtt ctt ctg gtt ggt aca aac cca cgt ttt gag gca cca	1368
Ala Asp Val Val Leu Leu Val Gly Thr Asn Pro Arg Phe Glu Ala Pro	
397 402 407 412	
ctg ttt aat gct aga att cga aag agc tgg ctg cat aat gac tta aaa	1416
Leu Phe Asn Ala Arg Ile Arg Lys Ser Trp Leu His Asn Asp Leu Lys	
413 418 423 428	
gtg gcc ctt ata ggc agt cca gtg gac ctc act tac aca tat gac cac	1464
Val Ala Leu Ile Gly Ser Pro Val Asp Leu Thr Tyr Thr Tyr Asp His	
429 434 439 444	
ctg gga gac tcc ccc aaa att ctt caa gac att gct tcg gga agc cat	1512
Leu Gly Asp Ser Pro Lys Ile Leu Gln Asp Ile Ala Ser Gly Ser His	
445 450 455 460	
cca ttt agc cag gtc cta aag gaa gct aaa aaa cca atg gtg gtt tta	1560
Pro Phe Ser Gln Val Leu Lys Glu Ala Lys Lys Pro Met Val Val Leu	
461 466 471 476	
ggc agt tct gca ctc caa aga aat gat gga gca gca att ctt gca gct	1608
Gly Ser Ser Ala Leu Gln Arg Asn Asp Gly Ala Ala Ile Leu Ala Ala	
477 482 487 492	
gtt tct agc att gca caa aag att cgg atg act agt ggt gtt act ggt	1656
Val Ser Ser Ile Ala Gln Lys Ile Arg Met Thr Ser Gly Val Thr Gly	
493 498 503 508	
gat tgg aaa gtt atg aat atc ctt cat agg att gca agt caa gta gct	1704
Asp Trp Lys Val Met Asn Ile Leu His Arg Ile Ala Ser Gln Val Ala	
509 514 519 524	
gct ttg gac ctt ggc tat aag cct ggg gtg gaa gca att cgg aag aac	1752
Ala Leu Asp Leu Gly Tyr Lys Pro Gly Val Glu Ala Ile Arg Lys Asn	
525 530 535 540	
cct ccc aag gtg ctg ttt ctc ctg gga gca gat gga ggt tgt atc aca	1800
Pro Pro Lys Val Leu Phe Leu Leu Gly Ala Asp Gly Gly Cys Ile Thr	
541 546 551 556	
cga cag gat ttg cca aag gat tgt ttc att att tat caa gga cat cat	1848
Arg Gln Asp Leu Pro Lys Asp Cys Phe Ile Ile Tyr Gln Gly His His	
557 562 567 572	
ggg gat gtt ggg gct ccc ata gct gat gtt att ctc cca gga gct gct	1896
Gly Asp Val Gly Ala Pro Ile Ala Asp Val Ile Leu Pro Gly Ala Ala	
573 578 583 588	
tac aca gag aag tct gct aca tat gtc aac act gag ggt aga gct cag	1944
Tyr Thr Glu Lys Ser Ala Thr Tyr Val Asn Thr Glu Gly Arg Ala Gln	

302 2571 DNA Homo sapiens CDS (404)..(1678) 302

589	594	599	604	
cag act aag gta gca gtg aca cct cct ggc ttg gca aga gaa gac tgg				1992
Gln Thr Lys Val Ala Val Thr Pro Pro Gly Leu Ala Arg Glu Asp Trp				
605	610	615	620	
aaa att ata aga gca ctc tct gag att gct gga atg act ctt cca tat				2040
Lys Ile Ile Arg Ala Leu Ser Glu Ile Ala Gly Met Thr Leu Pro Tyr				
621	626	631	636	
gat act ctg gat caa gta agg aac aga ttg gaa gaa ttc tct cct aat				2088
Asp Thr Leu Asp Gln Val Arg Asn Arg Leu Glu Glu Phe Ser Pro Asn				
637	642	647	652	
ctt gtt cga tat gat gat att gaa ggg gct aat tac ttc cag caa gca				2136
Leu Val Arg Tyr Asp Asp Ile Glu Gly Ala Asn Tyr Phe Gln Gln Ala				
653	658	663	668	
aat gag ctc tca aag cta gtg aac cag cag ctt ctt gct gac cca ctt				2184
Asn Glu Leu Ser Lys Leu Val Asn Gln Gln Leu Leu Ala Asp Pro Leu				
669	674	679	684	
gtt cca cct cag cta act cta aaa gac ttc tac atg aca gat tcg att				2232
Val Pro Pro Gln Leu Thr Leu Lys Asp Phe Tyr Met Thr Asp Ser Ile				
685	690	695	700	
agc aga gcc tca cag aca atg gcc aaa tgt gtc aaa gct gtc aca gag				2280
Ser Arg Ala Ser Gln Thr Met Ala Lys Cys Val Lys Ala Val Thr Glu				
701	706	711	716	
ggc gcc cag gca gta gag gaa cca tcc ata tgc tga agct tctactagga				2330
Gly Ala Gln Ala Val Glu Glu Pro Ser Ile Cys *				
717	722	727		
ccccagtttt gccgcagata attaatggac aactgtagtg cagtgatcct ttacaggttt				2390
atttcttttgt aaaaaaaaaa taataataat ttgaatcatg taatatttaa gggtatacta				2450
tgccatttttg aaaatgatat tagttatcaa ctttgcagtt tgaaaaacat gtattgtgtg				2510
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aacataaaga gatccttaaa tt				2592

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ccctgctgtg tgccttgtgc catgctgctc tgtagggga ctggggaggc caggacatgc	180
tgccaggag ctcccggtc agtgggaaag agtaaagca gagtgcttg ctactggtt	240
aaaagaaagg aacacaaata tgattgcttt cttactctgg gtttgccttt ctggcatgtt	300
gcctgggtcc caagacgaag tctcgatgt gtacatatat gagagttcag tactgcagta	360
tctattcagt gaagtataaa cgaaagagca tttttcaaaa caa atg gta tgt aat	415
Met Val Cys Asn	
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att ttt gtc ttc ttt agg gct ctg gaa ctt cat cca ttc tct atg aaa	463
Ile Phe Val Phe Phe Arg Ala Leu Glu Leu His Pro Phe Ser Met Lys	
5 10 15 20	
cct ctt ctg agg cgg gcg atg gcc tat gaa act cta gag cag tat ggg	511
Pro Leu Leu Arg Arg Ala Met Ala Tyr Glu Thr Leu Glu Gln Tyr Gly	
21 26 31 36	
aaa gct tat gtg gat tat aaa aca gtg ttg cag ata gac tgt gga ctc	559
Lys Ala Tyr Val Asp Tyr Lys Thr Val Leu Gln Ile Asp Cys Gly Leu	
37 42 47 52	
cag cta gca aat gac agt gtt aac agg cta tca aga att tta atg gag	607
Gln Leu Ala Asn Asp Ser Val Asn Arg Leu Ser Arg Ile Leu Met Glu	
53 58 63 68	
ctg gat gga cca aat tgg cgg gag aag ctg tca ctt att cct gct gtg	655
Leu Asp Gly Pro Asn Trp Arg Glu Lys Leu Ser Leu Ile Pro Ala Val	
69 74 79 84	
cct gct tct gtg cca ctg caa gct tgg cat ccg gca aaa gag atg atc	703
Pro Ala Ser Val Pro Leu Gln Ala Trp His Pro Ala Lys Glu Met Ile	
85 90 95 100	
tca aaa caa gca gga gac tcc agc agc cat cgc cag cag ggc atc aca	751
Ser Lys Gln Ala Gly Asp Ser Ser Ser His Arg Gln Gln Gly Ile Thr	
101 106 111 116	
gat gaa aaa aca ttt aaa gcc ctt aag gaa gaa gga aat caa tgt gta	799
Asp Glu Lys Thr Phe Lys Ala Leu Lys Glu Glu Gly Asn Gln Cys Val	
117 122 127 132	
aat gac aaa aac tat aaa gac gcc ctc agt aaa tac agc gaa tgc tta	847
Asn Asp Lys Asn Tyr Lys Asp Ala Leu Ser Lys Tyr Ser Glu Cys Leu	
133 138 143 148	
aag att aac aat aag gaa tgt gcc ata tat aca aac aga gct ctc tgt	895
Lys Ile Asn Asn Lys Glu Cys Ala Ile Tyr Thr Asn Arg Ala Leu Cys	
149 154 159 164	
tac ttg aag ctg tgc cag ttt gaa gaa gca aag cag gac tgt gat cag	943

Tyr Leu Lys Leu Cys Gln Phe Glu Glu Ala Lys Gln Asp Cys Asp Gln	
165	170 175 180
gca ctt cag cta gct gat ggg aac gtg aaa gcc ttc tat aga cga gct	991
Ala Leu Gln Leu Ala Asp Gly Asn Val Lys Ala Phe Tyr Arg Arg Ala	
181	186 191 196
ctg gct cat aaa gga ctc aag aat tat cag aaa agc tta att gat ctc	1039
Leu Ala His Lys Gly Leu Lys Asn Tyr Gln Lys Ser Leu Ile Asp Leu	
197	202 207 212
aat aaa gtt atc cta cta gat cca agt att att gag gca aag atg gaa	1087
Asn Lys Val Ile Leu Leu Asp Pro Ser Ile Ile Glu Ala Lys Met Glu	
213	218 223 228
ctg gaa gag gta act aga ctc ctt aat ctt aag gat aag aca gca cca	1135
Leu Glu Glu Val Thr Arg Leu Leu Asn Leu Lys Asp Lys Thr Ala Pro	
229	234 239 244
ttc aac aaa gaa aag gag aga agg aaa att gag att caa gag gtg aat	1183
Phe Asn Lys Glu Lys Glu Arg Arg Lys Ile Glu Ile Gln Glu Val Asn	
245	250 255 260
gaa ggc aag gag gag cct gga aga cct gca ggg gag gtc tcc acg gga	1231
Glu Gly Lys Glu Glu Pro Gly Arg Pro Ala Gly Glu Val Ser Thr Gly	
261	266 271 276
tgc ctt gct tct gag aag gga ggc aaa agc agc agg tca cca gaa gac	1279
Cys Leu Ala Ser Glu Lys Gly Gly Lys Ser Ser Arg Ser Pro Glu Asp	
277	282 287 292
cct gag aaa ctt ccg ata gcc aag cct att aat gcc tat gaa ttt ggt	1327
Pro Glu Lys Leu Pro Ile Ala Lys Pro Ile Asn Ala Tyr Glu Phe Gly	
293	298 303 308
cag att ata aat gct ctc agt acc agg aag gat aaa gaa gcc tgt gca	1375
Gln Ile Ile Asn Ala Leu Ser Thr Arg Lys Asp Lys Glu Ala Cys Ala	
309	314 319 324
cat ctt tta gcc atc act gca cca aaa gat ttg ccg atg ttt tta agt	1423
His Leu Leu Ala Ile Thr Ala Pro Lys Asp Leu Pro Met Phe Leu Ser	
325	330 335 340
aac aaa ctt gaa ggg gat aca ttc ctt ctc ctc att cag tct ctg aaa	1471
Asn Lys Leu Glu Gly Asp Thr Phe Leu Leu Leu Ile Gln Ser Leu Lys	
341	346 351 356
aat aat ctt att gaa aaa gat ccc tca ttg gtg tat cag cat ctt tta	1519
Asn Asn Leu Ile Glu Lys Asp Pro Ser Leu Val Tyr Gln His Leu Leu	
357	362 367 372
tac ctg agt aaa gca gaa agg ttt aag atg atg ttg aca cta att agc	1567
Tyr Leu Ser Lys Ala Glu Arg Phe Lys Met Met Leu Thr Leu Ile Ser	
373	378 383 388
aag ggc caa aag gag cta att gaa cag ctg ttt gag gac ctt tcg gac	1615
Lys Gly Gln Lys Glu Leu Ile Glu Gln Leu Phe Glu Asp Leu Ser Asp	

389	394	399	404	
aca cca aac aac cat ttt act tta gaa gat ata cag gcc cta aaa agg				1663
Thr Pro Asn Asn His Phe Thr Leu Glu Asp Ile Gln Ala Leu Lys Arg				
405	410	415	420	
cag tat gag ctt taa atcaagataa ttgtagatt tttccatgc atgtatgtgt				1718
Gln Tyr Glu Leu *				
421				
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aaagtttggg ctgcactata aaacatttta cttattttcc tacatagaac atgtatatcc				1838
tacaatctgc tttttattag ttgtaaatat tttcttatgt accagaacca aataagtata				1898
tttagaactt gttaaaaata cattttaatt tatgatatac atattatttt aattacttgt				1958
taaaattttg agttaagttg catttctttg ggctatgaag gagtcctctt aagtttgata				2018
gaaatgaatt tcttgtaaca ttctttttta aaagtggaag tcattaacag tgattattat				2078
atcacttata tcctgctaag atacacataa atcccatttt gtactagtac ctgtggatta				2138
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ttattaatth agagctataa gaggaactta ttttttctaa tacggaagca ttgcctaata				2258
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ttcttttata ttgcctatat aagcaaaaaa ccaaccactg tattaaagca aactaagcct				2378
gcatttatat ctgaattatt acctccatat ttaccaaac atttgaatgt ccccttccc				2438
ccttttttgt tttctgcttt tatgactgta tttattcctt tactgtaaaa gaatatgaag				2498
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<210> 303  
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<220>  
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<220>  
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<400> 303

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cagctagcac tgggacacag atccttgtct tcagcacctt ccaaggagcc aacttttatt	300
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caggagcagg gactttgact cttaggaaga gcacacatga gggcaaggct gctggcagac	540
gtctccattg tccttatgtt gtctgtgttg ttttttttt tttttattga ccatggtgat	600
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Met Ala Cys Thr	
1	
tat gta agt aat ctg ggg aag aag caa aga tct gtt tca ttc tta gcc	824
Tyr Val Ser Asn Leu Gly Lys Lys Gln Arg Ser Val Ser Phe Leu Ala	
5 10 15 20	
tca ggc ctc atg agg gtc tcc aca ggg ccg gag ctc agg tta cac cac	872
Ser Gly Leu Met Arg Val Ser Thr Gly Pro Glu Leu Arg Leu His His	
21 26 31 36	
tcc ttc gtc ctt aca gga gat gta ggg aga aga atc tgc agg ctg ctt	920
Ser Phe Val Leu Thr Gly Asp Val Gly Arg Arg Ile Cys Arg Leu Leu	
37 42 47 52	
gta gga ctg ttc acc aag ggg gat acc agc agc aag aga gtg cac ccg	968
Val Gly Leu Phe Thr Lys Gly Asp Thr Ser Ser Lys Arg Val His Pro	
53 58 63 68	
ttt agc cct gga ccc tgt ttc tta ctg tgt gac ttg gct aga gtt ggg	1016
Phe Ser Pro Gly Pro Cys Phe Leu Leu Cys Asp Leu Ala Arg Val Gly	
69 74 79 84	
agt tcc ccc aaa ata aac gtg tcc cca ttt tac cag aac caa acc tca	1064
Ser Ser Pro Lys Ile Asn Val Ser Pro Phe Tyr Gln Asn Gln Thr Ser	
85 90 95 100	
aca cag cga agc tgt act gtc ttt gtg tgg caa aga tgt tcc ctt gta	1112
Thr Gln Arg Ser Cys Thr Val Phe Val Trp Gln Arg Cys Ser Leu Val	
101 106 111 116	



gccgccggc	atg agc cac atc cag atc ccg ccg ggg ctc acg gag ctg	228
	Met Ser His Ile Gln Ile Pro Pro Gly Leu Thr Glu Leu	
	1 5 10	
ctg cag ggc tac acg gtg gag gtg ctg cga cag cag ccg cct gac ctc	276	
Leu Gln Gly Tyr Thr Val Glu Val Leu Arg Gln Gln Pro Pro Asp Leu		
14 19 24 29		
gtc gaa ttc gca gtg gag tac ttc acc cgc ctg cgc gag gcc cgc gcc	324	
Val Glu Phe Ala Val Glu Tyr Phe Thr Arg Leu Arg Glu Ala Arg Ala		
30 35 40 45		
cca gcc tca gtc ctg ccc gcc gcc acc cca cgc cag agc ctg ggc cac	372	
Pro Ala Ser Val Leu Pro Ala Ala Thr Pro Arg Gln Ser Leu Gly His		
46 51 56 61		
ccc ccg cca gaa ccc ggc ccg gac cgt gtc gcc gac gcc aaa ggg gac	420	
Pro Pro Pro Glu Pro Gly Pro Asp Arg Val Ala Asp Ala Lys Gly Asp		
62 67 72 77		
agc gag tcg gag gag gac gag gac ttg gaa gtt cca gtt cct agc aga	468	
Ser Glu Ser Glu Glu Asp Glu Asp Leu Glu Val Pro Val Pro Ser Arg		
78 83 88 93		
ttt aat aga cga gta tca gtc tgt gct gag acc tat aac cct gat gag	516	
Phe Asn Arg Arg Val Ser Val Cys Ala Glu Thr Tyr Asn Pro Asp Glu		
94 99 104 109		
gaa gag gaa gat aca gat cca agg gtg att cat cct aaa act gat gaa	564	
Glu Glu Glu Asp Thr Asp Pro Arg Val Ile His Pro Lys Thr Asp Glu		
110 115 120 125		
cag aga tgc aga ctt cag gaa gct tgc aaa gat att ctc ctt ttc aaa	612	
Gln Arg Cys Arg Leu Gln Glu Ala Cys Lys Asp Ile Leu Leu Phe Lys		
126 131 136 141		
aat ctt gat cag gaa cag ctt tct caa gtt ctc gat gcc atg ttt gaa	660	
Asn Leu Asp Gln Glu Gln Leu Ser Gln Val Leu Asp Ala Met Phe Glu		
142 147 152 157		
agg ata gtc aaa gct gat gag cat gtc att gac caa gga gat gat gga	708	
Arg Ile Val Lys Ala Asp Glu His Val Ile Asp Gln Gly Asp Asp Gly		
158 163 168 173		
gac aac ttt tat gtc ata gaa cgg gga act tat gac att tta gta aca	756	
Asp Asn Phe Tyr Val Ile Glu Arg Gly Thr Tyr Asp Ile Leu Val Thr		
174 179 184 189		
aaa gat aat caa acc cgc tct gtt ggt caa tat gac aac cgt ggc agt	804	
Lys Asp Asn Gln Thr Arg Ser Val Gly Gln Tyr Asp Asn Arg Gly Ser		
190 195 200 205		
ttt gga gaa cta gct ctg atg tac aac acc ccg aga gct gct acc att	852	
Phe Gly Glu Leu Ala Leu Met Tyr Asn Thr Pro Arg Ala Ala Thr Ile		
206 /211 216 221		
gtt gct acc tca gaa ggc tcc ctt tgg gga ctg gac cgg gtg act ttt	900	



Val Ala Thr Ser Glu Gly Ser Leu Trp Gly Leu Asp Arg Val Thr Phe	
222 227 232 237	
aga aga atc ata gtg aaa aat aat gca aag aag agg aag atg ttt gaa	948
Arg Arg Ile Ile Val Lys Asn Asn Ala Lys Lys Arg Lys Met Phe Glu	
238 243 248 253	
tca ttt att gag tct gtg ccc ctc ctt aaa tca cta gag gtg tca gaa	996
Ser Phe Ile Glu Ser Val Pro Leu Leu Lys Ser Leu Glu Val Ser Glu	
254 259 264 269	
cga atg aag att gtg gat gta ata gga gag aag atc tat aag gat gga	1044
Arg Met Lys Ile Val Asp Val Ile Gly Glu Lys Ile Tyr Lys Asp Gly	
270 275 280 285	
gaa cgc ata atc act cag ggt gaa aag gct gat agc ttt tac atc ata	1092
Glu Arg Ile Ile Thr Gln Gly Glu Lys Ala Asp Ser Phe Tyr Ile Ile	
286 291 296 301	
gag tct ggc gaa gtg agc atc ttg att aga agc agg act aaa tca aac	1140
Glu Ser Gly Glu Val Ser Ile Leu Ile Arg Ser Arg Thr Lys Ser Asn	
302 307 312 317	
aag gat ggt ggg aac cag gag gtc gag att gcc cgc tgc cat aag ggg	1188
Lys Asp Gly Gly Asn Gln Glu Val Glu Ile Ala Arg Cys His Lys Gly	
318 323 328 333	
cag tac ttt gga gag ctt gcc ctg gtc acc aac aaa ccc aga gct gcc	1236
Gln Tyr Phe Gly Glu Leu Ala Leu Val Thr Asn Lys Pro Arg Ala Ala	
334 339 344 349	
tca gct tat gca gtt gga gat gtc aaa tgc tta gtt atg gat gta caa	1284
Ser Ala Tyr Ala Val Gly Asp Val Lys Cys Leu Val Met Asp Val Gln	
350 355 360 365	
gca ttc gag agg ctt ctg ggg ccc tgc atg gac atc atg aag agg aac	1332
Ala Phe Glu Arg Leu Leu Gly Pro Cys Met Asp Ile Met Lys Arg Asn	
366 371 376 381	
atc tca cac tat gag gaa cag ctg gtg aag atg ttt ggc tcc agc gtg	1380
Ile Ser His Tyr Glu Glu Gln Leu Val Lys Met Phe Gly Ser Ser Val	
382 387 392 397	
gat ctg ggc aac ctc ggg cag tag gtgtgccaca cccagagcc ttcttagtgt	1434
Asp Leu Gly Asn Leu Gly Gln *	
398 403	
gacacaaaa ccttctgggc agccacagaa cacatacaga aaacagacat gacagaactg	1494
ttcctgccgt tgccgccact gctgccattg ctgtgggttat gggcatttag aaaacttgaa	1554
agtcagcact aaaggatggg cagagggttca acccacacct ccactttgct tctgaaggcc	1614
cattcattag accacttgta aagattactc caaccagtt tttatatctt tggttcaaaa	1674
cggcattgtct ctccaacaat ttaagtgcct gatacaaagt ccaaagtata aacatgctcc	1734

tttctctctt taaaaaaaaa aaa

1757

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<212> DNA  
<213> Homo sapiens

<220>  
<221> CDS  
<222> (518)..(1633)

<400> 305

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tgccctcagca agtgaagagg aggaagaaga ggaggaggag gaggatgaag atgaagagga 180

ggaagtggca gcttggaggc tgcccccaag atggagtcag ctgggaacct cccagcggcc 240

ccgcccttcc cgcgccactc atcgaaaaac ctgctcacag cgcgcgccgc gagccatgag 300

agccttccgg atgctgctct actcaaaaag cacctcgctg acattccact ggaagctttg 360

ggggcgccac cggggcgggc ggcggggcct cgcacacccc aagaaccatc tttcacccca 420

gcaagggggg gcgacgccac aggtgccatc cccctgttgt cgttttgact cccccgggg 480

gccacctcca ccccggtgg gtctgctagg tgctctc atg gct gag gat ggg gtg 535  
Met Ala Glu Asp Gly Val

1

aga ggg tct cca cca gtg ccc tct ggg ccc ccc atg gag gaa gat gga 583  
Arg Gly Ser Pro Pro Val Pro Ser Gly Pro Met Glu Glu Asp Gly  
7 12 17 22

ctc agg tgg act cca aag tct cct ctg gac cct gac tcg ggc ctc ctt 631  
Leu Arg Trp Thr Pro Lys Ser Pro Leu Asp Pro Asp Ser Gly Leu Leu  
23 28 33 38

tca tgt act ctg ccc aac ggt ttt ggg gga caa tct ggg cca gaa ggg 679  
Ser Cys Thr Leu Pro Asn Gly Phe Gly Gly Gln Ser Gly Pro Glu Gly  
39 44 49 54

gag cgc agc ttg gca ccc cct gat gcc agc atc ctc atc agc aat gtg 727  
Glu Arg Ser Leu Ala Pro Pro Asp Ala Ser Ile Leu Ile Ser Asn Val  
55 60 65 70

tgc agc atc ggg gac cat gtg gcc cag gag ctt ttt cag ggc tca gat 775  
Cys Ser Ile Gly Asp His Val Ala Gln Glu Leu Phe Gln Gly Ser Asp  
71 76 81 86

ttg ggc atg gca gaa gag gca gag agg cct ggg gag aaa gcc ggc cag 823  
Leu Gly Met Ala Glu Glu Ala Glu Arg Pro Gly Glu Lys Ala Gly Gln

87	92	97	102	
cac agc ccc ctg cga gag gag cat gtg acc tgc gta cag agc atc ttg				871
His Ser Pro Leu Arg Glu Glu His Val Thr Cys Val Gln Ser Ile Leu				
103	108	113	118	
gac gaa ttc ctt caa acg tat ggc agc ctc ata ccc ctc agc act gat				919
Asp Glu Phe Leu Gln Thr Tyr Gly Ser Leu Ile Pro Leu Ser Thr Asp				
119	124	129	134	
gag gta gta gag aag ctg gag gac att ttc cag cag gag ttt tcc acc				967
Glu Val Val Glu Lys Leu Glu Asp Ile Phe Gln Gln Glu Phe Ser Thr				
135	140	145	150	
cct tcc agg aag ggc ctg gtg ttg cag ctg atc cag tct tac cag cgg				1015
Pro Ser Arg Lys Gly Leu Val Leu Gln Leu Ile Gln Ser Tyr Gln Arg				
151	156	161	166	
atg cca ggc aat gcc atg gtg agg ggc ttc cga gtg gct tat aag cgg				1063
Met Pro Gly Asn Ala Met Val Arg Gly Phe Arg Val Ala Tyr Lys Arg				
167	172	177	182	
cac gtg ctg acc atg gat gac ttg ggg acc ttg tat gga cag aac tgg				1111
His Val Leu Thr Met Asp Asp Leu Gly Thr Leu Tyr Gly Gln Asn Trp				
183	188	193	198	
ctc aat gac cag gtg atg aac atg tat gga gac ctg gtc atg gac aca				1159
Leu Asn Asp Gln Val Met Asn Met Tyr Gly Asp Leu Val Met Asp Thr				
199	204	209	214	
gtc cct gaa aag gtg cat ttc ttc aat agt ttc ttc tat gat aaa ctc				1207
Val Pro Glu Lys Val His Phe Phe Asn Ser Phe Phe Tyr Asp Lys Leu				
215	220	225	230	
cgt acc aag ggt tat gat ggg gtg aaa agg tgg acc aaa aac gtg gac				1255
Arg Thr Lys Gly Tyr Asp Gly Val Lys Arg Trp Thr Lys Asn Val Asp				
231	236	241	246	
atc ttc aat aag gag cta ctg cta atc ccc atc cac ctg gag gtg cat				1303
Ile Phe Asn Lys Glu Leu Leu Leu Ile Pro Ile His Leu Glu Val His				
247	252	257	262	
tgg tcc ctc atc tct gtt gat gtg agg cga cgc acc atc acc tat ttt				1351
Trp Ser Leu Ile Ser Val Asp Val Arg Arg Arg Thr Ile Thr Tyr Phe				
263	268	273	278	
gac tgc cag cgt acc cta aac cgc cgc tgc cct aag cat att gcc aag				1399
Asp Ser Gln Arg Thr Leu Asn Arg Arg Cys Pro Lys His Ile Ala Lys				
279	284	289	294	
tat cta cag gca gag gcg gta aag aaa gac cga ctg gat ttc cac cag				1447
Tyr Leu Gln Ala Glu Ala Val Lys Lys Asp Arg Leu Asp Phe His Gln				
295	300	305	310	
ggc tgg aaa ggt tac ttc aaa atg aat gtg gcc agg cag aat aat gac				1495
Gly Trp Lys Gly Tyr Phe Lys Met Asn Val Ala Arg Gln Asn Asn Asp				
311	316	321	326	

agt gac tgt ggt gct ttt gtg ttg cag tac tgc aag cat ctg gcc ctg 1543  
 Ser Asp Cys Gly Ala Phe Val Leu Gln Tyr Cys Lys His Leu Ala Leu  
 327 332 337 342

tct cag cca ttc agc ttc acc cag cag gac atg ccc aaa ctt cgt cgg 1591  
 Ser Gln Pro Phe Ser Phe Thr Gln Gln Asp Met Pro Lys Leu Arg Arg  
 343 348 353 358

cag atc tac aag gag ctg tgt cac tgc aaa ctc act gtg tga gcctcgt 1640  
 Gln Ile Tyr Lys Glu Leu Cys His Cys Lys Leu Thr Val \*  
 359 364 369

acccagacc ccaagcccat aaatgggaag ggagacatgg gagtcccttc ccaagaaact 1700

ccagttcctt tctctctttg cctcttccca ctcacttccc tttggttttt catattttaa 1760

tggttcaatt tctgtatttt tttttctttg agagaataact tgttgatttc tgatgtgcag 1820

ggggtggcta cagaaaagcc cctttcttcc tctgtttgca ggggagtgtg gccctgtggc 1880

ctgggtggag cagtcacctt ccccttccc cgtgcaggga gcaggaaatc agtgctgggg 1940

gtgggtggcg gacaatagga tcaactgcctg ccagatcttc aaacttttat atatatatat 2000

atatatatat atatatatat aaaaatatat aaatgccacg gtcctgctct ggtcaataaa 2060

ggatcctttg ttgatacgta 2080

<210> 306

<211> 2029

<212> DNA

<213> Homo sapiens

<220>

<221> CDS

<222> (518)..(1582)

<400> 306

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tgcttcagca agtgaagagg aggaagaaga ggaggaggag gaggatgaag atgaagagga 180

ggaagtggca gcttggaggc tgcccccaag atggagtcag ctgggaacct cccagcggcc 240

ccgcccttcc cgcgccactc atcgaaaaac ctgctcacag cgcgcgcgcc gagccatgag 300

agccttcccg atgctgctct actcaaaaag cacctcgtg acattccact ggaagctttg 360

ggggcgccac cggggccggc ggcggggcct cgcacacccc aagaaccatc tttcacccca 420

gcaaggggggt gcgaogccac aggtgccatc cccctgttgt cgttttgact cccccgggg 480

gccacctcca ccccggtctgg gtctgctagg tgctcttc atg gct gag gat ggg gtg 535  
Met Ala Glu Asp Gly Val

1

aga ggg tct cca cca gtg ccc tct ggg ccc ccc atg gag gaa gat gga 583  
Arg Gly Ser Pro Pro Val Pro Ser Gly Pro Pro Met Glu Glu Asp Gly  
7 12 17 22

ctc agg tgg act cca aag tct cct ctg gac cct gac tcg ggc ctc ctt 631  
Leu Arg Trp Thr Pro Lys Ser Pro Leu Asp Pro Asp Ser Gly Leu Leu  
23 28 33 38

tca tgt act ctg ccc aac ggt ttt ggg gga caa tct ggg cca gaa ggg 679  
Ser Cys Thr Leu Pro Asn Gly Phe Gly Gly Gln Ser Gly Pro Glu Gly  
39 44 49 54

gag cgc agc ttg gca ccc cct gat gcc agc atc ctc atc agc aat gtg 727  
Glu Arg Ser Leu Ala Pro Pro Asp Ala Ser Ile Leu Ile Ser Asn Val  
55 60 65 70

tgc agc atc ggg gac cat gtg gcc cag gag ctt ttt cag ggc tca gat 775  
Cys Ser Ile Gly Asp His Val Ala Gln Glu Leu Phe Gln Gly Ser Asp  
71 76 81 86

ttg ggc atg gca gaa gag gca gag agg cct ggg gag aaa gcc ggc cag 823  
Leu Gly Met Ala Glu Glu Ala Glu Arg Pro Gly Glu Lys Ala Gly Gln  
87 92 97 102

cac agc ccc ctg cga gag gag cat gtg acc tgc gta cag agc atc ttg 871  
His Ser Pro Leu Arg Glu Glu His Val Thr Cys Val Gln Ser Ile Leu  
103 108 113 118

gac gaa ttc ctt caa acg tat ggc agc ctc ata ccc ctc agc act gat 919  
Asp Glu Phe Leu Gln Thr Tyr Gly Ser Leu Ile Pro Leu Ser Thr Asp  
119 124 129 134

gag gta gta gag aag ctg gag gac att ttc cag cag gag ttt tcc acc 967  
Glu Val Val Glu Lys Leu Glu Asp Ile Phe Gln Gln Glu Phe Ser Thr  
135 140 145 150

cct tcc agg aag ggc ctg gtg ttg cag ctg atc cag tct tac cag cgg 1015  
Pro Ser Arg Lys Gly Leu Val Leu Gln Leu Ile Gln Ser Tyr Gln Arg  
151 156 161 166

atg cca ggc aat gcc atg gtg agg ggc ttc cga gtg gct tat aag cgg 1063  
Met Pro Gly Asn Ala Met Val Arg Gly Phe Arg Val Ala Tyr Lys Arg  
167 172 177 182

cac gtg ctg acc atg gat gac ttg ggg acc ttg tat gga cag aac tgg 1111  
His Val Leu Thr Met Asp Asp Leu Gly Thr Leu Tyr Gly Gln Asn Trp  
183 188 193 198

ctc aat gac cag gtg atg aac atg tat gga gac ctg gtc atg gac aca 1159  
Leu Asn Asp Gln Val Met Asn Met Tyr Gly Asp Leu Val Met Asp Thr  
199 204 209 214

gtc cct gaa aag gtg cat ttc ttc aat agt ttc ttc tat gat aaa ctc	1207
Val Pro Glu Lys Val His Phe Phe Asn Ser Phe Phe Tyr Asp Lys Leu	
215 220 225 230	
cgt acc aag ggt tat gat ggg gtg aaa agg tgg acc aaa aac gtg gac	1255
Arg Thr Lys Gly Tyr Asp Gly Val Lys Arg Trp Thr Lys Asn Val Asp	
231 236 241 246	
atc ttc aat aag gag cta ctg cta atc ccc atc cac ctg gag gtg cat	1303
Ile Phe Asn Lys Glu Leu Leu Leu Ile Pro Ile His Leu Glu Val His	
247 252 257 262	
tgg tcc ctc atc tct gtt gat gtg agg cga cgc acc atc acc tat ttt	1351
Trp Ser Leu Ile Ser Val Asp Val Arg Arg Arg Thr Ile Thr Tyr Phe	
263 268 273 278	
gac tcg cag cgt acc cta aac cgc cgc tgc cct aag cat att gcc aag	1399
Asp Ser Gln Arg Thr Leu Asn Arg Arg Cys Pro Lys His Ile Ala Lys	
279 284 289 294	
tat cta cag gca gag gcg gta aag aaa gac cga ctg gat ttc cac cag	1447
Tyr Leu Gln Ala Glu Ala Val Lys Lys Asp Arg Leu Asp Phe His Gln	
295 300 305 310	
ggc tgg aaa ggt tac ttc aaa atg tac tgc aag cat ctg gcc ctg tct	1495
Gly Trp Lys Gly Tyr Phe Lys Met Tyr Cys Lys His Leu Ala Leu Ser	
311 316 321 326	
cag cca ttc agc ttc acc cag cag gac atg ccc aaa ctt cgt cgg cag	1543
Gln Pro Phe Ser Phe Thr Gln Gln Asp Met Pro Lys Leu Arg Arg Gln	
327 332 337 342	
atc tac aag gag ctg tgt cac tgc aaa ctc act gtg tga gcctcgtag	1592
Ile Tyr Lys Glu Leu Cys His Cys Lys Leu Thr Val *	
343 348 353	
ccagacccca agcccataaa tgggaaggga gacatgggag tcccttccca agaaactcca	1652
gttcctttcc tctcttgcc cttccactc acttcccttt ggtttttcat atttaaatgt	1712
ttcaatttct gtattttttt ttctttgaga gaataacttgt tgatttctga tgtgcagggg	1772
gtggctacag aaaagccct ttcttctct gtttgaggg gagtgtggcc ctgtggcctg	1832
ggtggagcag tcctctccc cttccccgt gcagggagca ggaaatcagt gctgggggtg	1892
gtgggcggac aataggatca ctgcctgcca gatcttcaaa cttttatata tatatatata	1952
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tcctttgttg atacgta	2029

<210> 307  
<211> 2982

<212> DNA  
 <213> Homo sapiens  
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 <221> CDS  
 <222> (198)..(2474)

<400> 307

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aattttttgt	atttttagta	gggacggggg	ttcaccatgt	tggtcagggt	ggtctcaaac	180
tacaggcgtg	agccacc	atg ccc gcc caa gaa	gtg gaa ata tct ttt aag			230
		Met Pro Ala Gln Glu Val	Glu Ile Ser Phe Lys			
		1	5			
att gga gcc tac gat	cag cag ata tgg	gaa aag tca atc	gaa cag act			278
Ile Gly Ala Tyr Asp	Gln Gln Ile Trp	Glu Lys Ser Ile	Glu Gln Thr			
12	17	22	27			
cag att aag ggt ttg	aaa aac aaa ccg	aaa aag atg ggc	cac ata aag			326
Gln Ile Lys Gly Leu	Lys Asn Lys Pro	Lys Lys Met Gly	His Ile Lys			
28	33	38	43			
cca gac ttg att gac	gtt gac tta atc	aga ggg tca aca	ttt gcc aaa			374
Pro Asp Leu Ile Asp	Val Asp Leu Ile	Arg Gly Ser Thr	Phe Ala Lys			
44	49	54	59			
gca aaa cct gaa att	cca tgg aca tct	ctg act cgg aag	ggg ctt gtt			422
Ala Lys Pro Glu Ile	Pro Trp Thr Ser	Leu Thr Arg Lys	Gly Leu Val			
60	65	70	75			
cga gtt gta ttt ttt	cca ttg ttc agc	aat tgg tgg att	cag gtt acc			470
Arg Val Val Phe Phe	Pro Leu Phe Ser	Asn Trp Trp Ile	Gln Val Thr			
76	81	86	91			
tct tta aga atc ttt	gtt tgg ctg tta	cta ctt tat ttc	atg caa gtt			518
Ser Leu Arg Ile Phe	Val Trp Leu Leu	Leu Leu Tyr Phe	Met Gln Val			
92	97	102	107			
ata gca att gtc tta	tat ttg atg atg	cct att gtg aac	ata agt gaa			566
Ile Ala Ile Val Leu	Tyr Leu Met Met	Pro Ile Val Asn	Ile Ser Glu			
108	113	118	123			
gta ctt gga ccc ttg	tgc ctt atg cta	ctc atg gga act	gtc cac tgt			614
Val Leu Gly Pro Leu	Cys Leu Met Leu	Leu Met Gly Thr	Val His Cys			
124	129	134	139			
caa att gtg tct act	cag ata aca aga	cca tca gga aac	aat gga aat			662
Gln Ile Val Ser Thr	Gln Ile Thr Arg	Pro Ser Gly Asn	Asn Gly Asn			
140	145	150	155			
cga aga aga aga aaa	tta cga aaa act	gta aat ggt gat	ggg agc cga			710
Arg Arg Arg Arg Lys	Leu Arg Lys Thr	Val Asn Gly Asp	Gly Ser Arg			
156	161	166	171			

gaa aat gga aat aac tcc tct gat aaa gtc aga gga ata gaa act ttg	758
Glu Asn Gly Asn Asn Ser Ser Asp Lys Val Arg Gly Ile Glu Thr Leu	
172 177 182 187	
gaa tct gta ccc att att ggt ggt ttt tgg gag act atc ttt ggc aac	806
Glu Ser Val Pro Ile Ile Gly Gly Phe Trp Glu Thr Ile Phe Gly Asn	
188 193 198 203	
agg att aaa aga gta aaa tta ata tct aac aaa ggg act gaa act gac	854
Arg Ile Lys Arg Val Lys Leu Ile Ser Asn Lys Gly Thr Glu Thr Asp	
204 209 214 219	
aat gac cca agt tgt gtc cat cct atc att aag agg aga caa tgt cga	902
Asn Asp Pro Ser Cys Val His Pro Ile Ile Lys Arg Arg Gln Cys Arg	
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Pro Glu Ile Arg Met Cys Gln Thr Arg Glu Lys Pro Lys Phe Ser Asp	
236 241 246 251	
gga gaa aag tgc cgt agg gag gct ttt agg cgt ttg ggt aat ggg gtg	998
Gly Glu Lys Cys Arg Arg Glu Ala Phe Arg Arg Leu Gly Asn Gly Val	
252 257 262 267	
tct gat gac ctg tca agt gaa gaa gat ggt gaa gca cgg aca cag atg	1046
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268 273 278 283	
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Ile Leu Leu Arg Arg Ser Val Glu Gly Ala Ser Ser Asp Asn Gly Cys	
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Glu Val Lys Asn Arg Lys Ser Ile Leu Ser Arg His Leu Asn Ser Gln	
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gta aag aaa acc act aca agg tgg tgt cat att gtg cgg gat tca gat	1190
Val Lys Lys Thr Thr Arg Trp Cys His Ile Val Arg Asp Ser Asp	
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agt ctg gct gaa tca gaa ttt gaa tca gca gcc ttc agc cag ggc tct	1238
Ser Leu Ala Glu Ser Glu Phe Glu Ser Ala Ala Phe Ser Gln Gly Ser	
332 337 342 347	
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Arg Ser Gly Val Ser Gly Gly Ser Arg Ser Leu Asn Met Ser Arg Arg	
348 353 358 363	
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Asp Ser Glu Ser Thr Arg His Asp Ser Glu Thr Glu Asp Met Leu Trp	
364 369 374 379	
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Asp Asp Leu Leu His Gly Pro Glu Cys Arg Ser Ser Val Thr Ser Asp	
380 385 390 395	



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Ser Glu Gly Ala His Val Asn Thr Leu His Ser Gly Thr Lys Arg Asp	
396 401 406 411	
ccc aaa gag gat gtt ttt cag cag aat cat tta ttc tgg ctt cag aat	1478
Pro Lys Glu Asp Val Phe Gln Gln Asn His Leu Phe Trp Leu Gln Asn	
412 417 422 427	
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Ser Ser Pro Ser Ser Asp Arg Val Ser Ala Ile Ile Trp Glu Gly Asn	
428 433 438 443	
gag tgc aaa aag atg gat atg tct gtg ttg gaa ata agt ggc atc atc	1574
Glu Cys Lys Lys Met Asp Met Ser Val Leu Glu Ile Ser Gly Ile Ile	
444 449 454 459	
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Met Ser Arg Val Asn Ala Tyr Gln Gln Gly Val Gly Tyr Gln Met Leu	
460 465 470 475	
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Gly Asn Val Val Thr Ile Gly Leu Ala Phe Phe Pro Phe Leu His Arg	
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Leu Phe Arg Glu Lys Ser Leu Asp Gln Leu Lys Ser Ile Ser Ala Glu	
492 497 502 507	
gag atc ttg act ctc ttt tgt ggg gca cca cct gtt aca cct att att	1766
Glu Ile Leu Thr Leu Phe Cys Gly Ala Pro Pro Val Thr Pro Ile Ile	
508 513 518 523	
gtt ttg tcg ata att aat ttt ttt gaa aga ttg tgt ctt act tgg atg	1814
Val Leu Ser Ile Ile Asn Phe Phe Glu Arg Leu Cys Leu Thr Trp Met	
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Phe Phe Phe Met Met Cys Val Ala Glu Arg Thr Tyr Lys Gln Arg Phe	
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Leu Phe Ala Lys Leu Phe Ser His Ile Thr Ser Ala Arg Lys Ala Arg	
556 561 566 571	
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Lys Tyr Glu Ile Pro His Phe Arg Leu Lys Lys Val Glu Asn Ile Lys	
572 577 582 587	
ata tgg tta tca ctg cgt tcc tat cta aag aga cgg ggg cca cag cgt	2006
Ile Trp Leu Ser Leu Arg Ser Tyr Leu Lys Arg Arg Gly Pro Gln Arg	
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Ser Val Asp Val Val Val Ser Ser Val Phe Leu Leu Thr Leu Ser Ile	
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Ala Phe Ile Cys Cys Ala Gln Val Leu Gln Gly His Lys Thr Phe Leu	
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aat gat gct tat aac tgg gag ttt ttg atc tgg gaa aca gct tta cta	2150
Asn Asp Ala Tyr Asn Trp Glu Phe Leu Ile Trp Glu Thr Ala Leu Leu	
636 641 646 651	
ctt ttt tta ttg cgt ctg gcc tca ctg ggg tct gaa acc aat aag aaa	2198
Leu Phe Leu Leu Arg Leu Ala Ser Leu Gly Ser Glu Thr Asn Lys Lys	
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Tyr Ser Asn Val Ser Ile Leu Leu Thr Glu Gln Ile Asn Leu Tyr Leu	
668 673 678 683	
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Lys Met Glu Lys Lys Pro Asn Lys Lys Glu Gln Leu Thr Leu Val Asn	
684 689 694 699	
aat gta tta aag ctg tcc acc aag ttg ttg aaa gag ctg gac aca cca	2342
Asn Val Leu Lys Leu Ser Thr Lys Leu Leu Lys Glu Leu Asp Thr Pro	
700 705 710 715	
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Phe Arg Leu Tyr Gly Leu Thr Met Asn Pro Leu Ile Tyr Asn Ile Thr	
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Arg Val Val Ile Leu Ser Ala Val Ser Gly Val Ile Ser Asp Leu Leu	
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Gly Phe Asn Ile Arg Leu Trp Lys Ile Lys Ser *	
748 753 758	
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tggaaatatg caaattcaat acttttccat tatagtctat agaactggag atttcatttc	2908
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attcccgggt cgaccacgc gtccgggtga ggcggccgaa atcgtaggac ttccgaaagc      180
agcgggtggcg tttgcttcac tgcttgggaag tgtgagtgcg cgaag      atg cga aag      234
                                     Met Arg Lys
                                     1

gtg gtt ttg atc acc ggg gct agc agt ggc att ggc ctg gcc ctc tgc      282
Val Val Leu Ile Thr Gly Ala Ser Ser Gly Ile Gly Leu Ala Leu Cys
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aag cgg ctg ctg gcg gaa gat gat gag ctt cat ctg tgt ttg gcg tgc      330
Lys Arg Leu Leu Ala Glu Asp Asp Glu Leu His Leu Cys Leu Ala Cys
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agg aac atg agc aag gca gaa gct gtc tgt gct gct ctg ctg gcc tct      378
Arg Asn Met Ser Lys Ala Glu Ala Val Cys Ala Ala Leu Leu Ala Ser
  36              41              46              51

cac ccc act gct gag gtc acc att gtc cag gtg gat gtc agc aac ctg      426
His Pro Thr Ala Glu Val Thr Ile Val Gln Val Asp Val Ser Asn Leu
  52              57              62              67

cag tcg gtc ttc cgg gcc tcc aag gaa ctt aag caa agg ttt cag aga      474
Gln Ser Val Phe Arg Ala Ser Lys Glu Leu Lys Gln Arg Phe Gln Arg
  68              73              78              83

tta gac tgt ata tat cta aat gct ggg atc atg cct aat cca caa cta      522
Leu Asp Cys Ile Tyr Leu Asn Ala Gly Ile Met Pro Asn Pro Gln Leu
  84              89              94              99

aat atc aaa gca ctt ttc ttt ggc ctc ttt tca aga aaa gtg att cat      570
Asn Ile Lys Ala Leu Phe Phe Gly Leu Phe Ser Arg Lys Val Ile His
  100              105              110              115

atg ttc tcc aca gct gaa ggc ctg ctg acc cag ggt gat aag atc act      618
Met Phe Ser Thr Ala Glu Gly Leu Leu Thr Gln Gly Asp Lys Ile Thr
  116              121              126              131

gct gat gga ctt cag gag gtg ttt gag acc aat gtc ttt ggc cat ttt      666
Ala Asp Gly Leu Gln Glu Val Phe Glu Thr Asn Val Phe Gly His Phe
  132              137              142              147

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164	169	174	179	
agc ctc gag gac ttc cag cac agc aaa ggc aag gaa ccc tac agc tct				810
Ser Leu Glu Asp Phe Gln His Ser Lys Gly Lys Glu Pro Tyr Ser Ser				
180	185	190	195	
tcc aaa tat gcc act gac ctt ttg agt gtg gct ttg aac agg aac ttc				858
Ser Lys Tyr Ala Thr Asp Leu Leu Ser Val Ala Leu Asn Arg Asn Phe				
196	201	206	211	
aac cag cag ggt ctc tat tcc aat gtg gcc tgt cca ggt aca gca ttg				906
Asn Gln Gln Gly Leu Tyr Ser Asn Val Ala Cys Pro Gly Thr Ala Leu				
212	217	222	227	
acc aat ttg aca tat gga att ctg cct ccg ttt ata tgg acg ctg ttg				954
Thr Asn Leu Thr Tyr Gly Ile Leu Pro Pro Phe Ile Trp Thr Leu Leu				
228	233	238	243	
atg ccg gca ata ttg cta ctt cgc ttt ttt gca aat gca ttc act ttg				1002
Met Pro Ala Ile Leu Leu Leu Arg Phe Phe Ala Asn Ala Phe Thr Leu				
244	249	254	259	
aca cca tat aat gga aca gaa gct ctg gta tgg ctt ttc cac caa aag				1050
Thr Pro Tyr Asn Gly Thr Glu Ala Leu Val Trp Leu Phe His Gln Lys				
260	265	270	275	
cct gaa tct ctc aat cct ctg atc aaa tat ctg agt gcc acc act ggc				1098
Pro Glu Ser Leu Asn Pro Leu Ile Lys Tyr Leu Ser Ala Thr Thr Gly				
276	281	286	291	
ttt gga aga aat tat att atg acc cag aag atg gac cta gat gaa gac				1146
Phe Gly Arg Asn Tyr Ile Met Thr Gln Lys Met Asp Leu Asp Glu Asp				
292	297	302	307	
act gct gaa aaa ttt tat caa aag tta ctg gaa ctg gaa aag cac att				1194
Thr Ala Glu Lys Phe Tyr Gln Lys Leu Leu Glu Leu Glu Lys His Ile				
308	313	318	323	
agg gtc act att caa aaa aca gat aat cag gcc agg ctc agt ggc tca				1242
Arg Val Thr Ile Gln Lys Thr Asp Asn Gln Ala Arg Leu Ser Gly Ser				
324	329	334	339	
tgc cta taa ttccagc actttgggag gccaaaggcag aaggatcact tgagaccagg				1298
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<400> 309

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atgcacctcc ctctgcggtg gggtcggga catggcaggt aatgagccgg acgaggggag	180
ccaagctgga gtttacacag gcaaactgtc agaaaagagt agcctgggct gtctggaaat	240
ctgagcc atg gac ttt ccc cag cac agc cag cat gtc ttg gaa cag ctg	289
Met Asp Phe Pro Gln His Ser Gln His Val Leu Glu Gln Leu	
1 5 10	
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Asn Gln Gln Arg Gln Leu Gly Leu Leu Cys Asp Cys Thr Phe Val Val	
15 20 25 30	
gac ggt gtt cac ttt aag gct cat aaa gca gtg ctg gcg gcc tgc agc	385
Asp Gly Val His Phe Lys Ala His Lys Ala Val Leu Ala Ala Cys Ser	
31 36 41 46	
gag tac ttc aag atg ctc ttc gtg gac cag aag gac gtg gtg cac ctg	433
Glu Tyr Phe Lys Met Leu Phe Val Asp Gln Lys Asp Val Val His Leu	
47 52 57 62	
gac atc agt aac gcg gca ggc ctg ggg cag gtg ctg gag ttt atg tac	481
Asp Ile Ser Asn Ala Ala Gly Leu Gly Gln Val Leu Glu Phe Met Tyr	
63 68 73 78	
acg gcc aag ctg agc ctg agc cct gag aac gtg gat gat gtg ctg gcc	529
Thr Ala Lys Leu Ser Leu Ser Pro Glu Asn Val Asp Asp Val Leu Ala	
79 84 89 94	
gtg gcc act ttc ctc caa atg cag gac atc atc acg gcc tgc cat gcc	577
Val Ala Thr Phe Leu Gln Met Gln Asp Ile Ile Thr Ala Cys His Ala	
95 100 105 110	
ctc aag tca ctt gct gag ccg gct acc agc cct ggg gga aat gcg gag	625
Leu Lys Ser Leu Ala Glu Pro Ala Thr Ser Pro Gly Gly Asn Ala Glu	
111 116 121 126	
gcc ttg gcc aca gaa gga ggg gac aag aga gcc aaa gag gag aag gtg	673
Ala Leu Ala Thr Glu Gly Gly Asp Lys Arg Ala Lys Glu Glu Lys Val	
127 132 137 142	
gcc acc agc acg ctg agc agg ctg gag cag gca gga cgc agc aca ccc	721
Ala Thr Ser Thr Leu Ser Arg Leu Glu Gln Ala Gly Arg Ser Thr Pro	
143 148 153 158	
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Ile Gly Pro Ser Arg Asp Leu Lys Glu Glu Arg Gly Gly Gln Ala Gln	
159 164 169 174	
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Ser Ala Ala Ser Gly Ala Glu Gln Thr Glu Lys Ala Asp Ala Pro Arg	
175 180 185 190	
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Glu Pro Pro Pro Val Glu Leu Lys Pro Asp Pro Thr Ser Gly Met Ala	
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gcc gca gaa gct gag gcc gct ttg tcc gag agc tcg gag caa gaa atg	913
Ala Ala Glu Ala Glu Ala Ala Leu Ser Glu Ser Ser Glu Gln Glu Met	
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Glu Val Glu Pro Ala Arg Lys Gly Glu Glu Glu Gln Lys Glu Gln Glu	
223 228 233 238	
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Glu Gln Glu Glu Glu Gly Ala Gly Pro Ala Glu Val Lys Glu Glu Gly	
239 244 249 254	
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Ser Gln Leu Glu Asn Gly Glu Ala Pro Glu Glu Asn Glu Asn Glu Glu	
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Ser Ala Gly Thr Asp Ser Gly Gln Glu Leu Gly Ser Glu Ala Arg Gly	
271 276 281 286	
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Leu Arg Ser Gly Thr Tyr Gly Asp Arg Thr Glu Ser Lys Ala Tyr Gly	
287 292 297 302	
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Ser Val Ile His Lys Cys Glu Asp Cys Gly Lys Glu Phe Thr His Thr	
303 308 313 318	
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Gly Asn Phe Lys Arg His Ile Arg Ile His Thr Gly Glu Lys Pro Phe	
319 324 329 334	
tcg tgc cgg gag tgc agc aag gcc ttt tcc gac ccg gcc gcg tgc aag	1297
Ser Cys Arg Glu Cys Ser Lys Ala Phe Ser Asp Pro Ala Ala Cys Lys	
335 340 345 350	
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Ala His Glu Lys Thr His Ser Pro Leu Lys Pro Tyr Gly Cys Glu Glu	
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Cys Gly Lys Ser Tyr Arg Leu Ile Ser Leu Leu Asn Leu His Lys Lys	
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Arg His Ser Gly Glu Ala Arg Tyr Arg Cys Glu Asp Cys Gly Lys Leu	

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Phe Thr Thr Ser Gly Asn Leu Lys Arg His Gln Leu Val His Ser Gly				
399	404	409	414	
gag aag ccc tac cag tgc gac tac tgc ggc cgc tcc ttc tcc gac ccc				1537
Glu Lys Pro Tyr Gln Cys Asp Tyr Cys Gly Arg Ser Phe Ser Asp Pro				
415	420	425	430	
act tcc aag atg cgc cac ctg gag acc cac gac acg gac aag gag cac				1585
Thr Ser Lys Met Arg His Leu Glu Thr His Asp Thr Asp Lys Glu His				
431	436	441	446	
aag tgc cca cac tgc gac aag aag ttc aac cag gta ggg aac ctg aag				1633
Lys Cys Pro His Cys Asp Lys Lys Phe Asn Gln Val Gly Asn Leu Lys				
447	452	457	462	
gcc cac ctg aag atc cac atc gct gac ggc ccc ctc aag tgc cga gag				1681
Ala His Leu Lys Ile His Ile Ala Asp Gly Pro Leu Lys Cys Arg Glu				
463	468	473	478	
tgt ggg aag cag ttc acc acc tca ggg aac ctg aag cgg cac ctt cgg				1729
Cys Gly Lys Gln Phe Thr Thr Ser Gly Asn Leu Lys Arg His Leu Arg				
479	484	489	494	
atc cac agc ggg gag aag ccc tac gtg tgc atc cac tgc cag cga cag				1777
Ile His Ser Gly Glu Lys Pro Tyr Val Cys Ile His Cys Gln Arg Gln				
495	500	505	510	
ttt gca gac ccc ggc gct ctg cag cgg cac gtc cgc att cac aca ggt				1825
Phe Ala Asp Pro Gly Ala Leu Gln Arg His Val Arg Ile His Thr Gly				
511	516	521	526	
gag aag cca tgc cag tgt gtg atg tgc ggt aag gcc ttc acc cag gcc				1873
Glu Lys Pro Cys Gln Cys Val Met Cys Gly Lys Ala Phe Thr Gln Ala				
527	532	537	542	
agc tcc ctc atc gcc cac gtg cgc cag cac acc ggg gag aag ccc tac				1921
Ser Ser Leu Ile Ala His Val Arg Gln His Thr Gly Glu Lys Pro Tyr				
543	548	553	558	
gtc tgc gag cgc tgc ggc aag aga ttc gtc cag tcc agc cag ttg gcc				1969
Val Cys Glu Arg Cys Gly Lys Arg Phe Val Gln Ser Ser Gln Leu Ala				
559	564	569	574	
aat cat att cgc cac cac gac aac atc cgc cca cac aag tgc agc gtg				2017
Asn His Ile Arg His His Asp Asn Ile Arg Pro His Lys Cys Ser Val				
575	580	585	590	
tgc agc aag gcc ttc gtg aac gtg ggg gac ctg tcc aag cac atc atc				2065
Cys Ser Lys Ala Phe Val Asn Val Gly Asp Leu Ser Lys His Ile Ile				
591	596	601	606	
att cac act gga gag aag cct tac ctg tgt gat aag tgt ggg cgt ggc				2113
Ile His Thr Gly Glu Lys Pro Tyr Leu Cys Asp Lys Cys Gly Arg Gly				
607	612	617	622	

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671 676 681 686	
gtg aca gcc gat gag acg gaa gtc ctg aag gcc gag atc agc aaa gct	2353
Val Thr Ala Asp Glu Thr Glu Val Leu Lys Ala Glu Ile Ser Lys Ala	
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Val Lys Gln Val Gln Glu Glu Asp Pro Asn Thr His Ile Leu Tyr Ala	
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Cys Asp Ser Cys Gly Asp Lys Phe Leu Asp Ala Asn Ser Leu Ala Gln	
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cat gtg cga atc cac aca gcc cag gca ctg gtc atg ttc cag aca gac	2497
His Val Arg Ile His Thr Ala Gln Ala Leu Val Met Phe Gln Thr Asp	
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Gln Val Leu Gln Ala Gly Glu Leu Val Phe Arg Pro Arg Asp Gly Ala	
767 772 777 782	
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ggacctggaa  atg gag gag cta atg ctg cag gat gag aca ctg ctg ggg      229
              Met Glu Glu Leu Met Leu Gln Asp Glu Thr Leu Leu Gly
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Thr Met Gln Ser Tyr Met Asp Ala Ser Leu Ile Ser Leu Ile Glu Asp
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Ser Trp Arg Pro Pro Arg Ser Arg Pro Arg Trp Gly Gln Ser Pro Pro
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Lys Pro Glu Gly Val Thr Glu Ala Lys His Pro Ala Ala Val Arg Leu				
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• 2005



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Ile Phe Lys Glu Ser Ile Leu Glu Ile Leu Asp Glu Glu Glu Leu Leu				
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Ser His Arg Asn Val Met Met Arg Leu Asn Leu Gln Leu Thr Met Gly				
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acc ttc tct ctt tcg ctc ttt gga cta atg gga gtt gct ttt gga atg				1227
Thr Phe Ser Leu Ser Leu Phe Gly Leu Met Gly Val Ala Phe Gly Met				
346	351	356	361	

aat ttg gaa tct tcc ctt gaa gag gac cat aga att ttt tgg ctg att 1275  
 Asn Leu Glu Ser Ser Leu Glu Glu Asp His Arg Ile Phe Trp Leu Ile  
 362 367 372 377

aca gga att atg ttc atg gga agt ggc ctc atc tgg agg cgc ctg ctt 1323  
 Thr Gly Ile Met Phe Met Gly Ser Gly Leu Ile Trp Arg Arg Leu Leu  
 378 383 388 393

tca ttc ctt gga cga cag cta gaa gct cca ttg cct cct atg atg gct 1371  
 Ser Phe Leu Gly Arg Gln Leu Glu Ala Pro Leu Pro Pro Met Met Ala  
 394 399 404 409

tct tta cct aaa aag act ctt ctg gca gat aga agc atg gaa ttg aaa 1419  
 Ser Leu Pro Lys Lys Thr Leu Leu Ala Asp Arg Ser Met Glu Leu Lys  
 410 415 420 425

aat agc ctc aga ctg gat gga ctt gga tca gga agg agc atc cta aca 1467  
 Asn Ser Leu Arg Leu Asp Gly Leu Gly Ser Gly Arg Ser Ile Leu Thr  
 426 431 436 441

aac cgt tag gaacagc cccgtggata ctgaagtttt ttttatggta gttacaggaa 1523  
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 442

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 a 1584

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 Met Glu Lys Leu Arg Arg Val Leu Ser Gly Gln  
 1 5

gac gac gag gag cag ggc ctg act gcg cag gtc ctg gat gcc tca tcc 159  
 Asp Asp Glu Glu Gln Gly Leu Thr Ala Gln Val Leu Asp Ala Ser Ser  
 12 17 22 27

ctt agt ttc aac acc aga ttg aaa tgg ttt gcc atc tgc ttc gta tgt 207  
 Leu Ser Phe Asn Thr Arg Leu Lys Trp Phe Ala Ile Cys Phe Val Cys  
 28 33 38 43

ggc gtt ttc ttt tct att ctt gga act gga ttg ctg tgg ctt ccg ggc 255

Gly	Val	Phe	Phe	Ser	Ile	Leu	Gly	Thr	Gly	Leu	Leu	Trp	Leu	Pro	Gly	
44					49					54					59	
ggc	ata	aag	ctt	ttt	gca	gtg	ttt	tat	acc	ctc	ggc	aat	ctt	gct	gcg	303
Gly	Ile	Lys	Leu	Phe	Ala	Val	Phe	Tyr	Thr	Leu	Gly	Asn	Leu	Ala	Ala	
60					65					70					75	
tta	gcc	agt	aca	tgc	ttt	tta	atg	gga	cct	gtg	aag	caa	ctg	aag	aaa	351
Leu	Ala	Ser	Thr	Cys	Phe	Leu	Met	Gly	Pro	Val	Lys	Gln	Leu	Lys	Lys	
76					81					86					91	
atg	ttt	gaa	gca	aca	aga	ttg	ctt	gca	aca	att	gtt	atg	ctt	ttg	tgt	399
Met	Phe	Glu	Ala	Thr	Arg	Leu	Leu	Ala	Thr	Ile	Val	Met	Leu	Leu	Cys	
92					97					102					107	
ttc	ata	ttt	acc	ctg	tgt	gct	gct	ctt	tgg	tgg	cat	aag	aag	gga	ctg	447
Phe	Ile	Phe	Thr	Leu	Cys	Ala	Ala	Leu	Trp	Trp	His	Lys	Lys	Gly	Leu	
108					113					118					123	
gct	gtg	tta	ttc	tgc	ata	ttg	cag	ttc	ttg	tca	atg	acc	tgg	tat	agc	495
Ala	Val	Leu	Phe	Cys	Ile	Leu	Gln	Phe	Leu	Ser	Met	Thr	Trp	Tyr	Ser	
124					129					134					139	
ctg	tgc	tac	atc	cca	tat	gca	agg	gat	gca	gtt	att	aaa	tgc	tgt	tct	543
Leu	Ser	Tyr	Ile	Pro	Tyr	Ala	Arg	Asp	Ala	Val	Ile	Lys	Cys	Cys	Ser	
140					145					150					155	
tct	ctc	cta	agt	tga	aaatcagaaa	cttgttgaaa	agagcacttg	aatgttgga								598
Ser	Leu	Leu	Ser	*												
156																
ctctatg	ttt	ggtgaag	ttt	gcttttcccc	ataaaacact	ccaggaacaa	ctgacgtgac									658
agttgaagac	cg	ttttgtac	taagtctcat	tttgtatact	ggtaaaaact	acatgcttga										718
ttaaaccatt	aatgctt	gt	aactttaaat	tcattatgtg	tcattaatat	acttttccaa										778
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caaagcagct	ttgaaatgtg	aatattttaa	ggtagacctg	tgctgcaaga	taattaaact											898
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<222> (234) .. (1235)

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gtggccaacc cccagccagg ttcccaggca ggatgagctg gggttggggg ggctaggccg 180  
agggccttgg gagctgggca gtctgggctg ggctgggctg ggcagggcgc cac atg 236  
Met  
1

gaa gct gga gga gca acg gga gcg ctg ggc gtg ggg tgc aaa ttg ccc 284  
Glu Ala Gly Gly Ala Thr Gly Ala Leu Gly Val Gly Cys Lys Leu Pro 17  
2 7 12

agt gcc ttc tgt ttc cca ggc agc tct gtg gcc atg gat atg ttc cag 332  
Ser Ala Phe Cys Phe Pro Gly Ser Ser Val Ala Met Asp Met Phe Gln 33  
18 23 28

aag gta gag aag atc gga gag ggc acc tat ggg gtg gtg tac aag gcc 380  
Lys Val Glu Lys Ile Gly Glu Gly Thr Tyr Gly Val Val Tyr Lys Ala 49  
34 39 44

aag aac agg gag aca ggg cag ctg gtg gcc ctg aag aag atc aga ctg 428  
Lys Asn Arg Glu Thr Gly Gln Leu Val Ala Leu Lys Lys Ile Arg Leu 65  
50 55 60

gat ttg gag atg gag ggg gtc cca agc act gcc atc agg gag atc tcg 476  
Asp Leu Glu Met Glu Gly Val Pro Ser Thr Ala Ile Arg Glu Ile Ser 81  
66 71 76

ctg ctc aag gaa ctg aag cac ccc aac atc gtc cga ctg ctg gac gtg 524  
Leu Leu Lys Glu Leu Lys His Pro Asn Ile Val Arg Leu Leu Asp Val 97  
82 87 92

gtg cac aac gag agg aag ctc tat ctg gtg ttt gag ttc ctc agc cag 572  
Val His Asn Glu Arg Lys Leu Tyr Leu Val Phe Glu Phe Leu Ser Gln 113  
98 103 108

gac ctg aag aag tac atg gac tcc acc cca ggc tca gag ctc ccc ctg 620  
Asp Leu Lys Lys Tyr Met Asp Ser Thr Pro Gly Ser Glu Leu Pro Leu 129  
114 119 124

cac ctc atc aag agc tac ctc ttc cag ctg ctg cag ggg gtg agt ttc 668  
His Leu Ile Lys Ser Tyr Leu Phe Gln Leu Leu Gln Gly Val Ser Phe 145  
130 135 140

tgc cac tca cat cgg gtc atc cac cga gac ctg aag ccc cag aac ctg 716  
Cys His Ser His Arg Val Ile His Arg Asp Leu Lys Pro Gln Asn Leu 161  
146 151 156

ctc atc aat gag ttg ggt gcc atc aag ctg gct gac ttc ggc ctg gct 764  
Leu Ile Asn Glu Leu Gly Ala Ile Lys Leu Ala Asp Phe Gly Leu Ala 177  
162 167 172

cgc gcc ttc ggg gtg ccc ctg cgc acc tac acc cat gag gtg gtg aca	812
Arg Ala Phe Gly Val Pro Leu Arg Thr Tyr Thr His Glu Val Val Thr	
178 183 188 193	
ctg tgg tat cgc gcc ccc gag att ctc ttg ggc agc aag ttc tat acc	860
Leu Trp Tyr Arg Ala Pro Glu Ile Leu Leu Gly Ser Lys Phe Tyr Thr	
194 199 204 209	
aca gct gtg gat atc tgg agc att ggt tgc atc ttt gca gag atg gtg	908
Thr Ala Val Asp Ile Trp Ser Ile Gly Cys Ile Phe Ala Glu Met Val	
210 215 220 225	
act cga aaa gcc ctg ttt cct ggt gac tct gag att gac cag ctc ttt	956
Thr Arg Lys Ala Leu Phe Pro Gly Asp Ser Glu Ile Asp Gln Leu Phe	
226 231 236 241	
cgt atc ttt cgt atg ctg ggg aca ccc agc gaa gac aca tgg ccc ggg	1004
Arg Ile Phe Arg Met Leu Gly Thr Pro Ser Glu Asp Thr Trp Pro Gly	
242 247 252 257	
gtc acc cag ctg cct gac tat aag ggc agc ttc cct aag tgg acc agg	1052
Val Thr Gln Leu Pro Asp Tyr Lys Gly Ser Phe Pro Lys Trp Thr Arg	
258 263 268 273	
aag gga ctg gaa gag att gtg ccc aat ctg gag cca gag ggc agg gac	1100
Lys Gly Leu Glu Glu Ile Val Pro Asn Leu Glu Pro Glu Gly Arg Asp	
274 279 284 289	
ctg ctc atg caa ctc ctg cag tat gac ccc agc cag cgg atc aca gcc	1148
Leu Leu Met Gln Leu Leu Gln Tyr Asp Pro Ser Gln Arg Ile Thr Ala	
290 295 300 305	
aag act gcc ctg gcc cac cgg tac ttc tca tcc cct gag ccc tcc cca	1196
Lys Thr Ala Leu Ala His Pro Tyr Phe Ser Ser Pro Glu Pro Ser Pro	
306 311 316 321	
gct gcc cgc cag tat gtg ctg cag cga ttc cgc cat tga gaatgtcaag	1245
Ala Ala Arg Gln Tyr Val Leu Gln Arg Phe Arg His *	
322 327 332	
gccacactca gatcctttct cgagcagcag ctgctgcccc agctgcctcc taccattgc	1305
caagagagga tgcattctggg gagagcaaag cactaaggaa ttcagcatca gcctgcagag	1365
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gggagtgagg gagaggagag agggcgttcc ccgatccca ggagagctgg gctatgactg	1725
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1825

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<213> Homo sapiens

<220>  
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<222> (417)..(1934)

<400> 314

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gagcaggaag	ctgagtgaga	ggttgcagaa	aaagtgtctt	cgctcggcag	aggttacagg	180
tggcatctca	gaaagagctt	tgaggctaca	ggctgtagtc	gggaagggga	tcggagaact	240
gtgtgaaggg	acagcttagg	gactagcgtc	ctgggactag	ggggaagttc	gcgactttct	300
gaagactggc	aggaatgtgc	ctcctggccc	tcgatgcttc	ccccctgagg	ggaggcatcg	360
tgagggactg	tggcaggctt	cactgaacgc	tgagccgggg	aggtccaact	ccacgt	416
atg gat ccg ggg aat gag aat tca gcc aca gag gct gcc gcg atc ata						464
Met Asp Pro Gly Asn Glu Asn Ser Ala Thr Glu Ala Ala Ala Ile Ile						
1 5 10 15						
gac cta gat ccc gac ttc gaa ccc cag agc cgt ccc cgc tcc tgc acc						512
Asp Leu Asp Pro Asp Phe Glu Pro Gln Ser Arg Pro Arg Ser Cys Thr						
17 22 27 32						
tgg ccc ctt ccc cga cca gag atc gct aac cag ccg tcc aag ccg ccc						560
Trp Pro Leu Pro Arg Pro Glu Ile Ala Asn Gln Pro Ser Lys Pro Pro						
33 38 43 48						
gag gtg gag cca gat ctg ggg gaa aag gta cac acg gag ggg cgc tca						608
Glu Val Glu Pro Asp Leu Gly Glu Lys Val His Thr Glu Gly Arg Ser						
49 54 59 64						
gag ccg atc ctg ttg ccc tct cgg ctc cca gag ccg gcc ggg gcc ccc						656
Glu Pro Ile Leu Leu Pro Ser Arg Leu Pro Glu Pro Ala Gly Ala Pro						
65 70 75 80						
cag ccc gga atc ctg ggg gct gta aca ggt cct cgg aag gga ggc tcc						704
Gln Pro Gly Ile Leu Gly Ala Val Thr Gly Pro Arg Lys Gly Gly Ser						
81 86 91 96						
cgc cgg aat gcc tgg gga aat cag tca tat gca gaa ctc atc agc cag						752
Arg Arg Asn Ala Trp Gly Asn Gln Ser Tyr Ala Glu Leu Ile Ser Gln						
97 102 107 112						

gcc att gaa agc gcc ccg gag aag cga ctg aca ctt gcc cag atc tac	800
Ala Ile Glu Ser Ala Pro Glu Lys Arg Leu Thr Leu Ala Gln Ile Tyr	
113 118 123 128	
gag tgg atg gtc cgt act gta ccc tac ttc aag gac aag ggt gac agc	848
Glu Trp Met Val Arg Thr Val Pro Tyr Phe Lys Asp Lys Gly Asp Ser	
129 134 139 144	
aac agc tca gca gga tgg aag aac tcg atc cgc cac aac ctg tcc ctg	896
Asn Ser Ser Ala Gly Trp Lys Asn Ser Ile Arg His Asn Leu Ser Leu	
145 150 155 160	
cac agc aag ttc atc aag gtt cac aac gag gcc acc ggc aaa agc tct	944
His Ser Lys Phe Ile Lys Val His Asn Glu Ala Thr Gly Lys Ser Ser	
161 166 171 176	
tgg tgg atg ctg aac cct gag gga ggc aag agc ggc aaa gcc ccc cgc	992
Trp Trp Met Leu Asn Pro Glu Gly Gly Lys Ser Gly Lys Ala Pro Arg	
177 182 187 192	
cgc cgg gcc gcc tcc atg gat agc agc agc aag ctg ctc cgg ggc cgc	1040
Arg Arg Ala Ala Ser Met Asp Ser Ser Ser Lys Leu Leu Arg Gly Arg	
193 198 203 208	
agt aaa gcc ccc aag aag aaa cca tct gtg ctg cca gct cca ccc gaa	1088
Ser Lys Ala Pro Lys Lys Lys Pro Ser Val Leu Pro Ala Pro Pro Glu	
209 214 219 224	
ggc gcc act cca acg agc cct gtc ggc cac ttt gcc aag tgg tca ggc	1136
Gly Ala Thr Pro Thr Ser Pro Val Gly His Phe Ala Lys Trp Ser Gly	
225 230 235 240	
agc ccc tgc tct cga aac cgt gaa gaa gcc gat atg tgg acc acc ttc	1184
Ser Pro Cys Ser Arg Asn Arg Glu Glu Ala Asp Met Trp Thr Thr Phe	
241 246 251 256	
cgt cca cga agc agt tca aat gcc agc agt gtc agc acc cgg ctg tcc	1232
Arg Pro Arg Ser Ser Ser Asn Ala Ser Ser Val Ser Thr Arg Leu Ser	
257 262 267 272	
ccc ttg agg cca gag tct gag gtg ctg gcg gag gaa ata cca gct tca	1280
Pro Leu Arg Pro Glu Ser Glu Val Leu Ala Glu Glu Ile Pro Ala Ser	
273 278 283 288	
gtc agc agt tat gca ggg ggt gtc cct ccc acc ctc aat gaa ggt cta	1328
Val Ser Ser Tyr Ala Gly Gly Val Pro Pro Thr Leu Asn Glu Gly Leu	
289 294 299 304	
gag ctg tta gat ggg ctc aat ctc acc tct tcc cat tcc ctg cta tct	1376
Glu Leu Leu Asp Gly Leu Asn Leu Thr Ser Ser His Ser Leu Leu Ser	
305 310 315 320	
cgg agt ggt ctc tct ggc ttc tct ttg cag cat cct ggg gtt acc ggc	1424
Arg Ser Gly Leu Ser Gly Phe Ser Leu Gln His Pro Gly Val Thr Gly	
321 326 331 336	
ccc tta cac acc tac agc agc tcc ctt ttc agc cca gca gag ggg ccc	1472

Pro Leu His Thr Tyr Ser Ser Ser Leu Phe Ser Pro Ala Glu Gly Pro	
337 342 347 352	
ctg tca gca gga gaa ggg tgc ttc tcc agc tcc cag gct ctg gag gcc	1520
Leu Ser Ala Gly Glu Gly Cys Phe Ser Ser Ser Gln Ala Leu Glu Ala	
353 358 363 368	
ctg ctc acc tct gat acg cca cca ccc cct gct gac gtc ctc atg acc	1568
Leu Leu Thr Ser Asp Thr Pro Pro Pro Pro Ala Asp Val Leu Met Thr	
369 374 379 384	
cag gta gat ccc att ctg tcc cag gct ccg act ctt ctg ttg ctg ggg	1616
Gln Val Asp Pro Ile Leu Ser Gln Ala Pro Thr Leu Leu Leu Leu Gly	
385 390 395 400	
ggg ctt cct tcc tcc agt aag ctg gcc acg ggc gtc ggc ctg tgt ccc	1664
Gly Leu Pro Ser Ser Ser Lys Leu Ala Thr Gly Val Gly Leu Cys Pro	
401 406 411 416	
aag ccc cta gag gct cca ggc ccc agc agt ctg gtt ccc acc ctt tct	1712
Lys Pro Leu Glu Ala Pro Gly Pro Ser Ser Leu Val Pro Thr Leu Ser	
417 422 427 432	
atg ata gca cca cct cca gtc atg gca agt gcc ccc atc ccc aag gct	1760
Met Ile Ala Pro Pro Pro Val Met Ala Ser Ala Pro Ile Pro Lys Ala	
433 438 443 448	
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Leu Gly Thr Pro Val Leu Thr Pro Pro Thr Glu Ala Ala Ser Gln Asp	
449 454 459 464	
aga atg cct cag gat cta gat ctt gat atg tat atg gag aac ctg gag	1856
Arg Met Pro Gln Asp Leu Asp Leu Asp Met Tyr Met Glu Asn Leu Glu	
465 470 475 480	
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Cys Asp Met Asp Asn Ile Ile Ser Asp Leu Met Asp Glu Gly Glu Gly	
481 486 491 496	
ctg gac ttc aac ttt gag cca gat ccc tga g tcatgcctgg aagctttgtc	1955
Leu Asp Phe Asn Phe Glu Pro Asp Pro *	
497 502	
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gcggcagaa	168
atg atg gaa gaa ttg cat agc ctg gac cca cga cgg cag	
Met Met Glu Glu Leu His Ser Leu Asp Pro Arg Arg Gln	
1 5 10	
gaa tta ttg gag gcc agg ttt act gga gta ggt gtt agt aag gga cca	216
Glu Leu Leu Glu Ala Arg Phe Thr Gly Val Gly Val Ser Lys Gly Pro	

14	19	24	29	
ctt aat agt gag tct tcc aac cag agc ttg tgc agc gtc gga tcc ttg				264
Leu Asn Ser Glu Ser Ser Asn Gln Ser Leu Cys Ser Val Gly Ser Leu				
30	35	40	45	
agt gat aaa gaa gta gag act ccc gag aaa aag cag aat gac cag cga				312
Ser Asp Lys Glu Val Glu Thr Pro Glu Lys Lys Gln Asn Asp Gln Arg				
46	51	56	61	
aat cgg aaa aga aaa gct gaa cca tat gaa act agc caa ggg aaa ggc				360
Asn Arg Lys Arg Lys Ala Glu Pro Tyr Glu Thr Ser Gln Gly Lys Gly				
62	67	72	77	
act cct agg gga cat aaa att agt gat tac ttt gag cga cga gta gaa				408
Thr Pro Arg Gly His Lys Ile Ser Asp Tyr Phe Glu Arg Arg Val Glu				
78	83	88	93	
cag ccc ctc tat ggt tta gat ggc agt gct gca aag gag gca acg gag				456
Gln Pro Leu Tyr Gly Leu Asp Gly Ser Ala Ala Lys Glu Ala Thr Glu				
94	99	104	109	
gag cag tct gct ctg cca acc ctc atg tca gtg atg cta gca aaa cct				504
Glu Gln Ser Ala Leu Pro Thr Leu Met Ser Val Met Leu Ala Lys Pro				
110	115	120	125	
cgg ctt gac aca gag cag ctg gcg caa agg gga gct ggc ctc tgc ttc				552
Arg Leu Asp Thr Glu Gln Leu Ala Gln Arg Gly Ala Gly Leu Cys Phe				
126	131	136	141	
act ttt gtt tca gct cag caa aac agt ccc tca tct acg gga tct ggc				600
Thr Phe Val Ser Ala Gln Gln Asn Ser Pro Ser Ser Thr Gly Ser Gly				
142	147	152	157	
aac aca gag cat tcc tgc agc tcc caa aaa cag atc tcc atc cag cac				648
Asn Thr Glu His Ser Cys Ser Ser Gln Lys Gln Ile Ser Ile Gln His				
158	163	168	173	
aga cag acc cag tcc gac ctc aca ata gaa aaa ata tct gca cta gaa				696
Arg Gln Thr Gln Ser Asp Leu Thr Ile Glu Lys Ile Ser Ala Leu Glu				
174	179	184	189	
aac agt aag aat tct gac tta gag aag aag gag gga aga ata gat gat				744
Asn Ser Lys Asn Ser Asp Leu Glu Lys Lys Glu Gly Arg Ile Asp Asp				
190	195	200	205	
tta tta aga gcc aac tgt gat ttg aga cgg cag att gat gaa cag caa				792
Leu Leu Arg Ala Asn Cys Asp Leu Arg Arg Gln Ile Asp Glu Gln Gln				
206	211	216	221	
aag atg cta gag aaa tac aag gaa cga tta aat aga tgt gtg aca atg				840
Lys Met Leu Glu Lys Tyr Lys Glu Arg Leu Asn Arg Cys Val Thr Met				
222	227	232	237	
agc aag aaa ctc ctt ata gaa aag tca aaa caa gag aag atg gcg tgt				888
Ser Lys Lys Leu Leu Ile Glu Lys Ser Lys Gln Glu Lys Met Ala Cys				
238	243	248	253	

aga gat aag agc atg caa gac cgc ttg aga ctg ggc cac ttt act act	936
Arg Asp Lys Ser Met Gln Asp Arg Leu Arg Leu Gly His Phe Thr Thr	
254 259 264 269	
gtc cga cac gga gcc tca ttt act gaa cag tgg aca gat ggt tat gct	984
Val Arg His Gly Ala Ser Phe Thr Glu Gln Trp Thr Asp Gly Tyr Ala	
270 275 280 285	
ttt cag aat ctt atc aag caa cag gaa agg ata aat tca cag agg gaa	1032
Phe Gln Asn Leu Ile Lys Gln Gln Glu Arg Ile Asn Ser Gln Arg Glu	
286 291 296 301	
gag ata gaa aga caa cgg aaa atg tta gca aag cgg aaa cct cct gcc	1080
Glu Ile Glu Arg Gln Arg Lys Met Leu Ala Lys Arg Lys Pro Pro Ala	
302 307 312 317	
atg ggt cag gcc cct cct gca acc aat gag cag aaa cag cgg aaa agc	1128
Met Gly Gln Ala Pro Pro Ala Thr Asn Glu Gln Lys Gln Arg Lys Ser	
318 323 328 333	
aag acc aat gga gct gaa aat gaa acg tta acg tta gca gaa tac cat	1176
Lys Thr Asn Gly Ala Glu Asn Glu Thr Leu Thr Leu Ala Glu Tyr His	
334 339 344 349	
gaa caa gaa gaa atc ttc aaa ctc aga tta ggt cat ctt aaa aag gag	1224
Glu Gln Glu Glu Ile Phe Lys Leu Arg Leu Gly His Leu Lys Lys Glu	
350 355 360 365	
gaa gca gag atc cag gca gag ctg gag aga cta gaa agg gtt aga aat	1272
Glu Ala Glu Ile Gln Ala Glu Leu Glu Arg Leu Glu Arg Val Arg Asn	
366 371 376 381	
cta cat atc agg gaa cta aaa agg ata cat aat gaa gat aat tca caa	1320
Leu His Ile Arg Glu Leu Lys Arg Ile His Asn Glu Asp Asn Ser Gln	
382 387 392 397	
ttt aaa gat cat cca acg cta aat gac aga tat ttg ttg tta cat ctt	1368
Phe Lys Asp His Pro Thr Leu Asn Asp Arg Tyr Leu Leu Leu His Leu	
398 403 408 413	
ttg ggt aga gga ggt ttc agt gaa gtt tac aag gca ttt gat cta aca	1416
Leu Gly Arg Gly Gly Phe Ser Glu Val Tyr Lys Ala Phe Asp Leu Thr	
414 419 424 429	
gag caa aga tac gta gct gtg aaa att cac cag tta aat aaa aac tgg	1464
Glu Gln Arg Tyr Val Ala Val Lys Ile His Gln Leu Asn Lys Asn Trp	
430 435 440 445	
aga gat gag aaa aag gag aat tac cac aag cat gca tgt agg gaa tac	1512
Arg Asp Glu Lys Lys Glu Asn Tyr His Lys His Ala Cys Arg Glu Tyr	
446 451 456 461	
cgg att cat aaa gag ctg gat cat ccc aga ata gtt aag ctg tat gat	1560
Arg Ile His Lys Glu Leu Asp His Pro Arg Ile Val Lys Leu Tyr Asp	
462 467 472 477	

tac ttt tca ctg gat act gac tcg ttt tgt aca gta tta gaa tac tgt	1608
Tyr Phe Ser Leu Asp Thr Asp Ser Phe Cys Thr Val Leu Glu Tyr Cys	
478 483 488 493	
gag gga aat gat ctg gac ttc tac ctg aaa cag cac aaa tta atg tcg	1656
Glu Gly Asn Asp Leu Asp Phe Tyr Leu Lys Gln His Lys Leu Met Ser	
494 499 504 509	
gag aaa gag gcc cgg tcc att atc atg cag att gtg aat gct tta aag	1704
Glu Lys Glu Ala Arg Ser Ile Ile Met Gln Ile Val Asn Ala Leu Lys	
510 515 520 525	
tac tta aat gaa ata aaa cct ccc atc ata cac tat gac ctc aaa cca	1752
Tyr Leu Asn Glu Ile Lys Pro Pro Ile Ile His Tyr Asp Leu Lys Pro	
526 531 536 541	
ggg aat att ctt tta gta aat ggt aca gcg tgt gga gag ata aaa att	1800
Gly Asn Ile Leu Leu Val Asn Gly Thr Ala Cys Gly Glu Ile Lys Ile	
542 547 552 557	
aca gat ttt ggt ctt tcg aag atc atg gat gat gat agc tac aat tca	1848
Thr Asp Phe Gly Leu Ser Lys Ile Met Asp Asp Asp Ser Tyr Asn Ser	
558 563 568 573	
gtg gat ggc atg gag cta aca tca caa ggt gct ggt act tat tgg tat	1896
Val Asp Gly Met Glu Leu Thr Ser Gln Gly Ala Gly Thr Tyr Trp Tyr	
574 579 584 589	
tta cca ccg gag tgt ttt gtg gtt ggg aaa gaa cca cca aag atc tca	1944
Leu Pro Pro Glu Cys Phe Val Val Gly Lys Glu Pro Pro Lys Ile Ser	
590 595 600 605	
aat aaa gtt gat gtg tgg tcg gtg ggt gtg atc ttc tat cag tgt ctt	1992
Asn Lys Val Asp Val Trp Ser Val Gly Val Ile Phe Tyr Gln Cys Leu	
606 611 616 621	
tat gga agg aag cct ttt ggc cat aac cag tct cag caa gac atc cta	2040
Tyr Gly Arg Lys Pro Phe Gly His Asn Gln Ser Gln Gln Asp Ile Leu	
622 627 632 637	
caa gag aat acg att ctt aaa gct act gaa gtg cag ttc ccg cca aag	2088
Gln Glu Asn Thr Ile Leu Lys Ala Thr Glu Val Gln Phe Pro Pro Lys	
638 643 648 653	
cca gta gta aca cct gaa gca aag gcg ttt att cga cga tgc ttg gcc	2136
Pro Val Val Thr Pro Glu Ala Lys Ala Phe Ile Arg Arg Cys Leu Ala	
654 659 664 669	
tac cga aag gag gac cgc att gat gtc cag cag ctg gcc tgt gat ccc	2184
Tyr Arg Lys Glu Asp Arg Ile Asp Val Gln Gln Leu Ala Cys Asp Pro	
670 675 680 685	
tac ttg ttg cct cac atc cga aag tca gtc tct aca agt agc cct gct	2232
Tyr Leu Leu Pro His Ile Arg Lys Ser Val Ser Thr Ser Ser Pro Ala	
686 691 696 701	
gga gct gct att gca tca acc tct ggg gcg tcc aat aac agt tct tct	2280

Gly Ala Ala Ile Ala Ser Thr Ser Gly Ala Ser Asn Asn Ser Ser Ser  
 702 707 712 717

aat tga gactgactcc aaggccacaa actgttcaac acacacaaag tggacaaatg 2336  
 Asn \*  
 718

gcgttcagca gcgggtttgg aacatagcga atccgaatgg atctgatgaa acctgtacca 2396

ggtgctttta ttttcttgct tttttcccat ccatagagca tgacagcatc gattctcatt 2456

gaggagaaac cttgggcagc tccggccagg ccttgtagga aaaggccccc ccogaggttc 2516

cagcgtcaac ggccactgtg tgtggctgct ctgagtgagg aaaaaattaa aaagaaaaac 2576

tggttccatg tactgtgaac ttgaaaactt gcagactcag gggggtccct gatgcagtgc 2636

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acttgttctt ttcttttaaat aaagtttagg taacatctcc tgaaaagctt gtagcacaaa 2756

ggctcagctg gggatgggtg ttgacttcgg aggaaaaaag ttgctattgc ccgttaaagg 2816

cactagagtt agtgttttat ccctaaataa tttcaatttt taaaaacatg cagcttcctt 2876

ctcccctttt ttatttttga aagaatacat ttggtcataa agtgaaaccc gtattagcaa 2936

gtacgtggca atgttcattc caatcagatg cagctttctc ctccgtctgg tctcctgttt 2996

gcaattgctt cctcatctc agtagggaaa aaattgagtg ggagtactga gatgtgtggg 3056

tttttgccat tggacaaaga atgaggtttag aagactgcag cttggagtct ctctaggttt 3116

tcaactatth cttcacaatt tgaacacttg acggttgtcc cttttaatth atttgaagtg 3176

ctattttttt aaataaaggt tcatctgtcc atgcagtcct cttggattct ctgaatgtag 3236

taactatgaa gctatgccaa aggtaggcag aaaatgggct tgggagccag aactccagg 3296

gatcagtagt tctacccat agtctttgtg tgcttgctaa atggtgtaca tttcttgta 3356

accacgttat taaaacttga tcagcacata aaaaaaaaaa aa 3398

<210> 316

<211> 872

<212> DNA

<213> Homo sapiens

<220>

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<222> (61) .. (639)

<400> 316

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Met	Leu	Thr	Leu	Glu	Phe	Gly	Ile	Leu	Glu	Phe	Asp	Pro	Ser	Trp	Ile	
1				5					10					15		
ggc	agc	tgg	aca	cag	agg	tcg	tgg	gtg	agc	tgg	agg	agc	agg	ccc	gga	156
Gly	Ser	Trp	Thr	Gln	Arg	Ser	Trp	Val	Ser	Trp	Arg	Ser	Arg	Pro	Gly	
17				22					27					32		
tgt	gag	ctg	ttc	tcc	ata	gtg	gtg	ttc	ggc	tcc	atc	gtg	aac	gag	ggc	204
Cys	Glu	Leu	Phe	Ser	Ile	Val	Val	Phe	Gly	Ser	Ile	Val	Asn	Glu	Gly	
33				38					43					48		
tac	ctc	aac	agc	gcc	tcc	gag	ggg	gag	gag	ttc	tgc	atc	tac	aac	cgc	252
Tyr	Leu	Asn	Ser	Ala	Ser	Glu	Gly	Glu	Glu	Phe	Cys	Ile	Tyr	Asn	Arg	
49				54					59					64		
aac	ccc	aac	gcc	tgc	agc	tat	ggc	gtg	gcc	gtg	ggc	gtg	ctc	gcc	ttc	300
Asn	Pro	Asn	Ala	Cys	Ser	Tyr	Gly	Val	Ala	Val	Gly	Val	Leu	Ala	Phe	
65				70					75					80		
ctc	acc	tgc	ctg	ctg	tac	ctg	gcc	ctg	gac	gtg	tac	ttc	ccg	cag	atc	348
Leu	Thr	Cys	Leu	Leu	Tyr	Leu	Ala	Leu	Asp	Val	Tyr	Phe	Pro	Gln	Ile	
81				86					91					96		
agc	agc	gtc	aag	gac	cgc	aag	aaa	gcc	gtc	ctg	tcc	gac	atc	ggg	gtc	396
Ser	Ser	Val	Lys	Asp	Arg	Lys	Lys	Ala	Val	Leu	Ser	Asp	Ile	Gly	Val	
97				102					107					112		
tcg	gcc	ttc	tgg	gct	ttc	ctc	tgg	ttc	gtg	gga	ttc	tgc	tac	ctg	gcc	444
Ser	Ala	Phe	Trp	Ala	Phe	Leu	Trp	Phe	Val	Gly	Phe	Cys	Tyr	Leu	Ala	
113				118					123					128		
aac	cag	tgg	cag	gtc	tcc	aag	ccc	aag	gac	aac	cca	ctg	aac	gaa	ggg	492
Asn	Gln	Trp	Gln	Val	Ser	Lys	Pro	Lys	Asp	Asn	Pro	Leu	Asn	Glu	Gly	
129				134					139					144		
acg	gac	gca	gcc	cgg	gcc	gcc	atc	gcc	ttc	tcc	ttt	ttc	tcc	atc	ttc	540
Thr	Asp	Ala	Ala	Arg	Ala	Ala	Ile	Ala	Phe	Ser	Phe	Phe	Ser	Ile	Phe	
145				150					155					160		
acc	tgg	agc	ctg	acc	gca	gcc	ctg	gcc	gtg	cgg	aga	ttc	aag	gac	cta	588
Thr	Trp	Ser	Leu	Thr	Ala	Ala	Leu	Ala	Val	Arg	Arg	Phe	Lys	Asp	Leu	
161				166					171					176		
agc	ttc	cag	gag	gag	tac	agc	aca	ctg	ttc	cct	gcc	tcg	gca	cag	cgg	636
Ser	Phe	Gln	Glu	Glu	Tyr	Ser	Thr	Leu	Phe	Pro	Ala	Ser	Ala	Gln	Pro	
177				182					187					192		
tag	gcct	ccccggc	cttg	cag	agg	cgg	cag	cct	gta	tc	ccccct	g	cagt	gag	gtg	693
*																
193																
gcaggagcag	cctagtgcca	gaaatgtcca	agatgccagg	gcatgcaggg												

cattgattct tcatgcgttc attcattcag taaacattta ttgagcaaaa aaaaaaaaaa 872

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<212> DNA  
<213> Homo sapiens

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<222> (93)..(668)

<400> 317

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Met Glu Gly Gly Ala Tyr Gly  
1 5

gcg ggc aaa gcc ggg ggc gcc ttc gac ccc tac acc ctg gtc cgg cag 161  
Ala Gly Lys Ala Gly Gly Ala Phe Asp Pro Tyr Thr Leu Val Arg Gln  
8 13 18 23

cgc cac acc atc ctg cgc gtc gtg tct tgg ctg ttc tcc ata gtg gtg 209  
Pro His Thr Ile Leu Arg Val Val Ser Trp Leu Phe Ser Ile Val Val  
24 29 34 39

ttc ggc tcc atc gtg aac gag ggc tac ctc aac agc gcc tcc gag ggg 257  
Phe Gly Ser Ile Val Asn Glu Gly Tyr Leu Asn Ser Ala Ser Glu Gly  
40 45 50 55

gag gag ttc tgc atc tac aac cgc aac ccc aac gcc tgc agc tat ggc 305  
Glu Glu Phe Cys Ile Tyr Asn Arg Asn Pro Asn Ala Cys Ser Tyr Gly  
56 61 66 71

gtg gcc gtg ggc gtg ctc gcc ttc ctc acc tgc ctg ctg tac ctg gcc 353  
Val Ala Val Gly Val Leu Ala Phe Leu Thr Cys Leu Leu Tyr Leu Ala  
72 77 82 87

ctg gac gtg tac ttc ccg cag atc agc agc gtc aag gac cgc aag aaa 401  
Leu Asp Val Tyr Phe Pro Gln Ile Ser Ser Val Lys Asp Arg Lys Lys  
88 93 98 103

gcc gtc ctg tcc gac atc ggt gtc tcg gcc ttc tgg gct ttc ctc tgg 449  
Ala Val Leu Ser Asp Ile Gly Val Ser Ala Phe Trp Ala Phe Leu Trp  
104 109 114 119

ttc gtg gga ttc tgc tac ctg gcc aac cag tgg cag gtc tcc aag ccc 497  
Phe Val Gly Phe Cys Tyr Leu Ala Asn Gln Trp Gln Val Ser Lys Pro  
120 125 130 135

aag gac aac cca ctg aac gaa ggg acg gac gca gcc cgg gcc gcc atc 545  
Lys Asp Asn Pro Leu Asn Glu Gly Thr Asp Ala Ala Arg Ala Ala Ile  
136 141 146 151

gcc ttc tcc ttt ttc tcc atc ttc acc tgg agc ctg acc gca gcc ctg	593
Ala Phe Ser Phe Phe Ser Ile Phe Thr Trp Ser Leu Thr Ala Ala Leu	
152 157 162 167	
gcc gtg cgg aga ttc aag gac cta agc ttc cag gag gag tac agc aca	641
Ala Val Arg Arg Phe Lys Asp Leu Ser Phe Gln Glu Glu Tyr Ser Thr	
168 173 178 183	
ctg ttc cct gcc tcg gca cag ccg tag gcctc cccggcttgc agaggccggc	693
Leu Phe Pro Ala Ser Ala Gln Pro *	
184 189	
agccctgtat cacccttggc agtgaggtgg caggagcagc ctagtgccag aaatgtccaa	753
gatgccaggg catgcagggc agtggaaaggc tggcttgagg aaccaattca gggtctccac	813
tgactcattc attccttcac cgctccttc attgattctt catgcgttca ttcattcagt	873
aaacatttat tgagcagctg ttttgtgcct agtgatgaat taggtggggc ccttggtctc	933
aggagccac aggctgggga ggagaaaaca aacacatcaa tatctcttcc aaatggacag	993
ccgtggacag ttaccaggta ggtagcggcc ccatacatgg gctgcctaga ggcgttcag	1053
gtccccattg ctgagctgtg ggtgcagagc aatagcctct ccttcacag cggtgtgaag	1113
agtgacctca ctgtccttag ggtagcatc ctggccgagg atgtcacagg gctcctggtc	1173
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atctctactt tgagagtaat tctcatgtga tgaatccttg ttctccaaa ggattttggt	1473
ctctggttct acacagggtt cctgcttggg gccccagct gcctgggcag gaactcacc	1533
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<220>  
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 <222> (61) .. (609)

<400> 318



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Met Leu Thr Leu Glu Phe Gly Ile Leu Glu Phe Asp Pro Ser Trp Ile	
1 5 10 15	
ggc agc tgg aca cag agg tcg tgg ctg ttc tcc ata gtg gtg ttc ggc	156
Gly Ser Trp Thr Gln Arg Ser Trp Leu Phe Ser Ile Val Val Phe Gly	
17 22 27 32	
tcc atc gtg aac gag ggc tac ctc aac agc gcc tcc gag ggg gag gag	204
Ser Ile Val Asn Glu Gly Tyr Leu Asn Ser Ala Ser Glu Gly Glu Glu	
33 38 43 48	
ttc tgc atc tac aac cgc aac ccc aac gcc tgc agc tat ggc gtg gcc	252
Phe Cys Ile Tyr Asn Arg Asn Pro Asn Ala Cys Ser Tyr Gly Val Ala	
49 54 59 64	
gtg ggc gtg ctc gcc ttc ctc acc tgc ctg ctg tac ctg gcc ctg gac	300
Val Gly Val Leu Ala Phe Leu Thr Cys Leu Leu Tyr Leu Ala Leu Asp	
65 70 75 80	
gtg tac ttc ccg cag atc agc agc gtc aag gac cgc aag aaa gcc gtc	348
Val Tyr Phe Pro Gln Ile Ser Ser Val Lys Asp Arg Lys Lys Ala Val	
81 86 91 96	
ctg tcc gac atc ggt gtc tcg gcc ttc tgg gct ttc ctc tgg ttc gtg	396
Leu Ser Asp Ile Gly Val Ser Ala Phe Trp Ala Phe Leu Trp Phe Val	
97 102 107 112	
gga ttc tgc tac ctg gcc aac cag tgg cag gtc tcc aag ccc aag gac	444
Gly Phe Cys Tyr Leu Ala Asn Gln Trp Gln Val Ser Lys Pro Lys Asp	
113 118 123 128	
aac cca ctg aac gaa ggg acg gac gca gcc cgg gcc gcc atc gcc ttc	492
Asn Pro Leu Asn Glu Gly Thr Asp Ala Ala Arg Ala Ala Ile Ala Phe	
129 134 139 144	
tcc ttt ttc tcc atc ttc acc tgg agc ctg acc gca gcc ctg gcc gtg	540
Ser Phe Phe Ser Ile Phe Thr Trp Ser Leu Thr Ala Ala Leu Ala Val	
145 150 155 160	
cgg aga ttc aag gac cta agc ttc cag gag gag tac agc aca ctg ttc	588
Arg Arg Phe Lys Asp Leu Ser Phe Gln Glu Glu Tyr Ser Thr Leu Phe	
161 166 171 176	
cct gcc tcg gca cag ccg tag gc ctccccggct tgcagaggcc ggcagccctg	641
Pro Ala Ser Ala Gln Pro *	
177 182	
tatcaccctt ggcagtgagg tggcaggagc agcctagtgc cagaaatgtc caagatgcc	701
gggcatgcag ggcagtggaa ggctggcttg aggaaccaat tcaggttctc cactgactca	761
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 <222> (182)..(1957)

<400> 319

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ggtcgtcaga cccgctgccc ttggcggtcg aagtcgtcgt gcgggcccgcc ggcggccgcc      180
c   atg gag aag gcc agg aga ggc ggg gat ggc gtc ccc cgg ggg ccc      226
    Met Glu Lys Ala Arg Arg Gly Gly Asp Gly Val Pro Arg Gly Pro
      1             5             10

gta ctg cac atc gtg gtg gtc gga ttt cac cac aag aag ggc tgc cag      274
Val Leu His Ile Val Val Val Gly Phe His His Lys Lys Gly Cys Gln
  16             21             26             31

gtt gaa ttc tct tac ccg ccc ctg att cca gga gat gga cat gac agc      322
Val Glu Phe Ser Tyr Pro Pro Leu Ile Pro Gly Asp Gly His Asp Ser
  32             37             42             47

cac act tta cct gaa gaa tgg aag tat ttg ccc ttc ctt gcc tta cca      370
His Thr Leu Pro Glu Glu Trp Lys Tyr Leu Pro Phe Leu Ala Leu Pro
  48             53             58             63

gat ggc gca cac aac tac cag gaa gat act gtg ttt ttt cac ttg cca      418
Asp Gly Ala His Asn Tyr Gln Glu Asp Thr Val Phe Phe His Leu Pro
  64             69             74             79

ccc aga aat gga aat gga gcc aca gta ttt ggt atc tct tgc tat cga      466
Pro Arg Asn Gly Asn Gly Ala Thr Val Phe Gly Ile Ser Cys Tyr Arg
  80             85             90             95

caa att gaa gcc aag gca ctg aaa gta agg caa gca gat atc acc aga      514
Gln Ile Glu Ala Lys Ala Leu Lys Val Arg Gln Ala Asp Ile Thr Arg
  96             101            106            111

gag act gtt cag aaa agt gtc tgt gtt cta agc aag ctg cct ctg tat      562
Glu Thr Val Gln Lys Ser Val Cys Val Leu Ser Lys Leu Pro Leu Tyr
 112            117            122            127

ggc tta ctt caa gca aaa ctt caa ctc att aca cat gca tat ttt gaa      610
Gly Leu Leu Gln Ala Lys Leu Gln Leu Ile Thr His Ala Tyr Phe Glu
 128            133            138            143

gag aag gat ttt tcc caa att tct att cta aag gag ctt tat gaa cat      658
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Glu Lys Asp Phe Ser Gln Ile Ser Ile Leu Lys Glu Leu Tyr Glu His	
144 149 154 159	
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Met Asn Ser Ser Leu Gly Gly Ala Ser Leu Glu Gly Ser Gln Val Tyr	
160 165 170 175	
ctt ggt ctg tca cct cga gat ctt gtc ctt cat ttt cga cac aag gtc	754
Leu Gly Leu Ser Pro Arg Asp Leu Val Leu His Phe Arg His Lys Val	
176 181 186 191	
tta atc cta ttt aag cta att ctt ctt gaa aaa aag gtt ctt ttt tat	802
Leu Ile Leu Phe Lys Leu Ile Leu Leu Glu Lys Lys Val Leu Phe Tyr	
192 197 202 207	
att tct cca gtg aat aaa ttg gtg ggt gca ctg atg act gtg tta tcc	850
Ile Ser Pro Val Asn Lys Leu Val Gly Ala Leu Met Thr Val Leu Ser	
208 213 218 223	
ctt ttt cca ggc atg att gaa cat ggt ctc agt gac tgt tct cag tat	898
Leu Phe Pro Gly Met Ile Glu His Gly Leu Ser Asp Cys Ser Gln Tyr	
224 229 234 239	
aga ccc cgg aaa agt atg tct gaa gat ggt ggg ctt cag gaa agt aac	946
Arg Pro Arg Lys Ser Met Ser Glu Asp Gly Gly Leu Gln Glu Ser Asn	
240 245 250 255	
cca tgt gca gat gat ttt gtt tct gca tcc act gct gat gtt tca cat	994
Pro Cys Ala Asp Asp Phe Val Ser Ala Ser Thr Ala Asp Val Ser His	
256 261 266 271	
acc aac ttg gga act atc agg aaa gtc atg gca gga aac cat gga gaa	1042
Thr Asn Leu Gly Thr Ile Arg Lys Val Met Ala Gly Asn His Gly Glu	
272 277 282 287	
gat gct gcc atg aag act gag gag cct ttg ttc caa gtg gaa gac agc	1090
Asp Ala Ala Met Lys Thr Glu Glu Pro Leu Phe Gln Val Glu Asp Ser	
288 293 298 303	
agc aaa ggg cag gaa ccc aat gat acc aat caa tat ttg aaa cct cca	1138
Ser Lys Gly Gln Glu Pro Asn Asp Thr Asn Gln Tyr Leu Lys Pro Pro	
304 309 314 319	
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Ser Arg Pro Ser Pro Asp Ser Ser Glu Ser Asp Trp Glu Thr Leu Asp	
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Pro Ser Val Leu Glu Asp Pro Asn Leu Lys Glu Arg Glu Gln Leu Gly	
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Ser Asp Gln Thr Asn Leu Phe Pro Lys Asp Ser Val Pro Ser Glu Ser	
352 357 362 367	
ctt cca att act gta caa cct caa gct aat acg gga cag gta gtc ctg	1330
Leu Pro Ile Thr Val Gln Pro Gln Ala Asn Thr Gly Gln Val Val Leu	

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ata cca ggg ctc att tgc ggt ttg gaa gag gat cag tat ggc atg ccc				1378
Ile Pro Gly Leu Ile Ser Gly Leu Glu Glu Asp Gln Tyr Gly Met Pro				
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ctg gcc atc ttc aca aag gga tat ctg tgt ttg cct tac atg gca ttg				1426
Leu Ala Ile Phe Thr Lys Gly Tyr Leu Cys Leu Pro Tyr Met Ala Leu				
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Gln Gln His His Leu Leu Ser Asp Val Thr Val Arg Gly Phe Val Ala				
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Gly Ala Thr Asn Ile Leu Phe Arg Gln Gln Lys His Leu Ser Asp Ala				
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Ile Val Glu Val Glu Glu Ala Leu Ile Gln Ile His Asp Pro Glu Leu				
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Arg Lys Leu Leu Asn Pro Thr Thr Ala Asp Leu Arg Phe Ala Asp Tyr				
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Leu Val Arg His Val Thr Glu Asn Arg Asp Asp Val Phe Leu Asp Gly				
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Thr Gly Trp Glu Gly Gly Asp Glu Trp Ile Arg Ala Gln Phe Ala Val				
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Tyr Ile His Ala Leu Leu Ala Ala Thr Leu Gln Leu Val Leu Phe Arg				
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Arg Asn Val Val Gln Thr Gly Lys Ala Val Gly Gln Ser Val Gly Gly				
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592				

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Leu Asp Cys	Gln Leu Thr	Arg Asp Arg	Val Val	Val Val	Ser His Asp	
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Glu Asn Leu	Cys Arg Gln	Ser Gly Leu	Asn Arg	Asp Val	Gly Ser Leu	
33	38	43		48		
gac ttc gag	gac ctg ccc	ctc tac aag	gag aag	ctg gag	gtt tac ttc	432
Asp Phe Glu	Asp Leu Pro	Leu Tyr Lys	Glu Lys	Leu Glu	Val Tyr Phe	
49	54	59		64		
tct cca ggc	cac ttt gct	cac ggg tca	gac cgg	cgc atg	gtt cgt ctg	480
Ser Pro Gly	His Phe Ala	His Gly Ser	Asp Arg	Arg Met	Val Arg Leu	
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gag gac ctg	ttc cag agg	ttt cca agg	aca ccc	atg agc	gta gag atc	528
Glu Asp Leu	Phe Gln Arg	Phe Pro Arg	Thr Pro	Met Ser	Val Glu Ile	
81	86	91		96		
aaa ggg aag	aac gaa gag	ctc atc cgt	gag ata	gca ggc	ttg gtg aga	576
Lys Gly Lys	Asn Glu Glu	Leu Ile Arg	Glu Ile	Ala Gly	Leu Val Arg	
97	102	107		112		
cgc tat gac	cgt aat gaa	atc acc atc	tgg gcc	tcg gag	aag agc tcg	624
Arg Tyr Asp	Arg Asn Glu	Ile Thr Ile	Trp Ala	Ser Glu	Lys Ser Ser	
113	118	123		128		
gtc atg aag	aaa tgc aag	gct gcc tct	ctc tct	gtc gcc	cag gct gga	672
Val Met Lys	Lys Cys Lys	Ala Ala Ser	Leu Ser	Val Ala	Gln Ala Gly	
129	134	139		144		
gtg cgg tgg	tgc gac ctc	ggc tca ctg	caa cct	ctg cct	cct ggg ttc	720
Val Arg Trp	Cys Asp Leu	Gly Ser Leu	Gln Pro	Leu Pro	Pro Gly Phe	
145	150	155		160		
aag cga ttc	tca tgc ttc	agc ctc ccg	agt agc	tgg gat	tac aga acc	768
Lys Arg Phe	Ser Cys Phe	Ser Leu Pro	Ser Ser	Trp Asp	Tyr Arg Thr	
161	166	171		176		
ccg aga tgc	ccc tgt cct	tca caa taa	gccga	ggattctggg	tgctgctttc	820
Pro Arg Cys	Pro Cys Pro	Ser Gln *				

177

182

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                                   Met Arg Arg Leu
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Val Asp Gly Asn Arg Pro Ser Ser Ala Ala Ser Ala Phe Lys Val Pro
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Ala Pro Lys Thr Ser Gly Asn Pro Ala Asn Ser Ala Arg Lys Pro Gly
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tca gca ggt ggc cct aag gtt gga gca ggt gct tct aag gaa gga ggt 367
Ser Ala Gly Gly Pro Lys Val Gly Ala Gly Ala Ser Lys Glu Gly Gly
 53                58                63                68

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cct tct att cag att tat tct agt cga gaa ctc gaa gaa aca tta aat Pro Ser Ile Gln Ile Tyr Ser Ser Arg Glu Leu Glu Glu Thr Leu Asn 85 90 95 100	463
aaa atc agg gaa att ttg tca gat gat aaa cat gac tgg gat cag cgt Lys Ile Arg Glu Ile Leu Ser Asp Asp Lys His Asp Trp Asp Gln Arg 101 106 111 116	511
gcc aat gca ctg aag aaa att cga tca ctg ctt gtt gct gga gct gca Ala Asn Ala Leu Lys Lys Ile Arg Ser Leu Leu Val <sup>3</sup> Ala Gly Ala Ala 117 122 127 132	559
cag tat gat tgc ttt ttt caa cat tta cga ttg ttg gat gga gca ctt Gln Tyr Asp Cys Phe Phe Gln His Leu Arg Leu Leu Asp Gly Ala Leu 133 138 143 148	607
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cgg cat act cat gta ccc aga ctt ata cct tta ata aca agc aat tgc Arg His Thr His Val Pro Arg Leu Ile Pro Leu Ile Thr Ser Asn Cys 213 218 223 228	847
aca tca aaa tca gtt ccc gtg agg aga cgt tca ttt gaa ttt tta gat Thr Ser Lys Ser Val Pro Val Arg Arg Arg Ser Phe Glu Phe Leu Asp 229 234 239 244	895
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gtc ttg gtt gaa act att aaa aag gga att cat gat gct gac gct gag Val Leu Val Glu Thr Ile Lys Lys Gly Ile His Asp Ala Asp Ala Glu 261 266 271 276	991
gcc aga gtg gag gca aga aag aca tac atg ggt ctt aga aac cac ttt Ala Arg Val Glu Ala Arg Lys Thr Tyr Met Gly Leu Arg Asn His Phe 277 282 287 292	1039
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Pro Gly Glu Ala Glu Thr Leu Tyr Asn Ser Leu Glu Pro Ser Tyr Gln	
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Arg Leu Ser Val Ala Arg Ser Ser Arg Ile Pro Arg Pro Ser Val Ser	



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His	Ser	Val	Asp	Lys	Lys	Gly	His	Val	His	Tyr	Leu	Ile	Lys	Trp	Arg	
630					635					640					645	
gac	tta	cct	tac	gat	cag	gct	tct	tgg	gag	agt	gag	gat	gtg	gag	atc	2201
Asp	Leu	Pro	Tyr	Asp	Gln	Ala	Ser	Trp	Glu	Ser	Glu	Asp	Val	Glu	Ile	
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cag	gat	tac	gac	ctg	ttc	aag	cag	agc	tat	tgg	aat	cac	agg	gag	tta	2249
Gln	Asp	Tyr	Asp	Leu	Phe	Lys	Gln	Ser	Tyr	Trp	Asn	His	Arg	Glu	Leu	
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atg	agg	ggg	gag	gaa	ggc	cga	cca	ggc	aag	aag	ctc	aag	aag	gtg	aag	2297
Met	Arg	Gly	Glu	Glu	Gly	Arg	Pro	Gly	Lys	Lys	Leu	Lys	Lys	Val	Lys	
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ctt	cgg	aag	ttg	gag	agg	cct	cca	gaa	acg	cca	aca	gtt	gat	cca	aca	2345
Leu	Arg	Lys	Leu	Glu	Arg	Pro	Pro	Glu	Thr	Pro	Thr	Val	Asp	Pro	Thr	
694					699					704					709	
gtg	aag	tat	gag	cga	cac	gca	gag	tac	ctg	gat	gct	aca	ggg	gga	acc	2393
Val	Lys	Tyr	Glu	Arg	His	Ala	Glu	Tyr	Leu	Asp	Ala	Thr	Gly	Gly	Thr	
710					715					720					725	
ctg	cac	ccc	tat	caa	atg	gag	ggc	ctg	aat	tgg	ttg	cgc	ttc	tcc	tgg	2441
Leu	His	Pro	Tyr	Gln	Met	Glu	Gly	Leu	Asn	Trp	Leu	Arg	Phe	Ser	Trp	
726					731					736					741	
gct	cag	ggc	act	gac	acc	atc	ttg	gct	gat	gag	atg	ggc	ctt	ggg	aaa	2489
Ala	Gln	Gly	Thr	Asp	Thr	Ile	Leu	Ala	Asp	Glu	Met	Gly	Leu	Gly	Lys	



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Thr Val Gln Thr Ala Val Phe Leu Tyr Ser Leu Tyr Lys Glu Gly His				
758	763	768	773	
tcc aaa ggc ccc ttc cta gtg agc gcc cct ctt tct acc atc atc aac				2585
Ser Lys Gly Pro Phe Leu Val Ser Ala Pro Leu Ser Thr Ile Ile Asn				
774	779	784	789	
tgg gag cgg gag ttt gaa atg tgg gct cca gac atg tat gtc gta acc				2633
Trp Glu Arg Glu Phe Glu Met Trp Ala Pro Asp Met Tyr Val Val Thr				
790	795	800	805	
tat gtg ggt gac aag gac agc cgt gcc atc atc cga gag aat gag ttc				2681
Tyr Val Gly Asp Lys Asp Ser Arg Ala Ile Ile Arg Glu Asn Glu Phe				
806	811	816	821	
tcc ttt gaa gac aat gcc att cgt ggt ggc aag aag gcc tcc cgc atg				2729
Ser Phe Glu Asp Asn Ala Ile Arg Gly Gly Lys Lys Ala Ser Arg Met				
822	827	832	837	
aag aaa gag gca tct gtg aaa ttc cat gtg ctg ctg aca tcc tat gaa				2777
Lys Lys Glu Ala Ser Val Lys Phe His Val Leu Leu Thr Ser Tyr Glu				
838	843	848	853	
ttg atc acc att gac atg gct att ttg ggc tct att gat tgg gcc tgc				2825
Leu Ile Thr Ile Asp Met Ala Ile Leu Gly Ser Ile Asp Trp Ala Cys				
854	859	864	869	
ctc atc gtg gat gaa gcc cat cgg ctg aag aac aat cag tct aag ttc				2873
Leu Ile Val Asp Glu Ala His Arg Leu Lys Asn Asn Gln Ser Lys Phe				
870	875	880	885	
ttc cgg gta ttg aat ggt tac tca ctc cag cac aag ctg ttg ctg act				2921
Phe Arg Val Leu Asn Gly Tyr Ser Leu Gln His Lys Leu Leu Leu Thr				
886	891	896	901	
ggg aca cca tta caa aac aat ctg gaa gag ttg ttt cat ctg ctc aac				2969
Gly Thr Pro Leu Gln Asn Asn Leu Glu Glu Leu Phe His Leu Leu Asn				
902	907	912	917	
ttt ctc acc ccc gag agg ttc cac aat ttg gaa ggt ttt ttg gag gag				3017
Phe Leu Thr Pro Glu Arg Phe His Asn Leu Glu Gly Phe Leu Glu Glu				
918	923	928	933	
ttt gct gac att gcc aag gag gac cag ata aaa aaa ctg cat gac atg				3065
Phe Ala Asp Ile Ala Lys Glu Asp Gln Ile Lys Lys Leu His Asp Met				
934	939	944	949	
ctg ggg ccg cac atg ttg cgg cgg ctc aaa gcc gat gtg ttc aag aac				3113
Leu Gly Pro His Met Leu Arg Arg Leu Lys Ala Asp Val Phe Lys Asn				
950	955	960	965	
atg ccc tcc aag aca gaa cta att gtg cgt gtg gag ctg agc cct atg				3161
Met Pro Ser Lys Thr Glu Leu Ile Val Arg Val Glu Leu Ser Pro Met				
966	971	976	981	

cag aag aaa tac tac aag tac atc ctc act cga aat ttt gaa gca ctc	3209
Gln Lys Lys Tyr Tyr Lys Tyr Ile Leu Thr Arg Asn Phe Glu Ala Leu	
982 987 992 997	
aat gcc cga ggt ggt ggc aac cag gtg tct ctg ctg aat gtg gtg atg	3257
Asn Ala Arg Gly Gly Gly Asn Gln Val Ser Leu Leu Asn Val Val Met	
998 1003 1008 1013	
gat ctt aag aag tgc tgc aac cat cca tac ctc ttc cct gtg gct gca	3305
Asp Leu Lys Lys Cys Cys Asn His Pro Tyr Leu Phe Pro Val Ala Ala	
1014 1019 1024 1029	
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Met Glu Ala Pro Lys Met Pro Asn Gly Met Tyr Asp Gly Ser Ala Leu	
1030 1035 1040 1045	
atc aga gca tct ggg aaa tta ttg ctg ctg cag aaa atg ctc aag aac	3401
Ile Arg Ala Ser Gly Lys Leu Leu Leu Leu Gln Lys Met Leu Lys Asn	
1046 1051 1056 1061	
ctt aag gag ggt ggg cat cgt gta ctc atc ttt tcc cag atg acc aag	3449
Leu Lys Glu Gly Gly His Arg Val Leu Ile Phe Ser Gln Met Thr Lys	
1062 1067 1072 1077	
atg cta gac ctg cta gag gat ttc ttg gaa cat gaa ggt tat aaa tac	3497
Met Leu Asp Leu Leu Glu Asp Phe Leu Glu His Glu Gly Tyr Lys Tyr	
1078 1083 1088 1093	
gaa cgc atc gat ggt gga atc act ggg aac atg cgg caa gag gcc att	3545
Glu Arg Ile Asp Gly Gly Ile Thr Gly Asn Met Arg Gln Glu Ala Ile	
1094 1099 1104 1109	
gac cgc ttc aat gca ccg ggt gct cag cag ttc tgc ttc ttg ctt tcc	3593
Asp Arg Phe Asn Ala Pro Gly Ala Gln Gln Phe Cys Phe Leu Leu Ser	
1110 1115 1120 1125	
act cga gct ggg ggc ctt gga atc aat ctg gcc act gct gac aca gtt	3641
Thr Arg Ala Gly Gly Leu Gly Ile Asn Leu Ala Thr Ala Asp Thr Val	
1126 1131 1136 1141	
att atc tat gac tct gac tgg aac ccc cat aat gac att cag gcc ttt	3689
Ile Ile Tyr Asp Ser Asp Trp Asn Pro His Asn Asp Ile Gln Ala Phe	
1142 1147 1152 1157	
agc aga gct cac cgg att ggg caa aat aaa aag gta atg atc tac cgg	3737
Ser Arg Ala His Arg Ile Gly Gln Asn Lys Lys Val Met Ile Tyr Arg	
1158 1163 1168 1173	
ttt gtg acc cgt gcg tca gtg gag gag cgc atc acg cag gtg gca aag	3785
Phe Val Thr Arg Ala Ser Val Glu Glu Arg Ile Thr Gln Val Ala Lys	
1174 1179 1184 1189	
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Lys Lys Met Met Leu Thr His Leu Val Val Arg Pro Gly Leu Gly Ser	
1190 1195 1200 1205	

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Lys Thr Gly Ser Met Ser Lys Gln Glu Leu Asp Asp Ile Leu Lys Phe	
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ggc act gag gaa cta ttc aag gat gaa gcc act gat gga gga gga gac	3929
Gly Thr Glu Glu Leu Phe Lys Asp Glu Ala Thr Asp Gly Gly Gly Asp	
1222 1227 1232 1237	
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Asn Lys Glu Gly Glu Asp Ser Ser Val Ile His Tyr Asp Asp Lys Ala	
1238 1243 1248 1253	
att gaa cgg ctg cta gac cgt aac cag gat gag act gaa gac aca gaa	4025
Ile Glu Arg Leu Leu Asp Arg Asn Gln Asp Glu Thr Glu Asp Thr Glu	
1254 1259 1264 1269	
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Leu Gln Gly Met Asn Glu Tyr Leu Ser Ser Phe Lys Val Ala Gln Tyr	
1270 1275 1280 1285	
gtg gta cgg gaa gaa gaa atg ggg gag gaa gag gag gta gaa cgg gaa	4121
Val Val Arg Glu Glu Glu Met Gly Glu Glu Glu Glu Val Glu Arg Glu	
1286 1291 1296 1301	
atc att aaa cag gaa gaa agt gtg gat cct gac tac tgg gag aaa ttg	4169
Ile Ile Lys Gln Glu Glu Ser Val Asp Pro Asp Tyr Trp Glu Lys Leu	
1302 1307 1312 1317	
ctg cgg cac cat tat gag cag cag caa gaa gat cta gcc cga aat ctg	4217
Leu Arg His His Tyr Glu Gln Gln Gln Glu Asp Leu Ala Arg Asn Leu	
1318 1323 1328 1333	
ggc aaa gga aaa aga atc cgt aaa cag gtc aac tac aat gat ggc tcc	4265
Gly Lys Gly Lys Arg Ile Arg Lys Gln Val Asn Tyr Asn Asp Gly Ser	
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Gln Glu Asp Arg Asp Trp Gln Asp Asp Gln Ser Asp Asn Gln Ser Asp	
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Tyr Ser Val Ala Ser Glu Glu Gly Asp Glu Asp Phe Asp Glu Arg Ser	
1366 1371 1376 1381	
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Lys Pro Leu Pro Pro Leu Leu Ala Arg Val Gly Gly Asn Ile Glu Val	
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cga tat ggt atg cca cct cag gat gct ttt act acc cag tgg ctt gta	4553

Arg Tyr Gly Met Pro Pro Gln Asp Ala Phe Thr Thr Gln Trp Leu Val	
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Arg Asp Leu Arg Gly Lys Ser Glu Lys Glu Phe Lys Ala Tyr Val Ser	
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ctt ttc atg cgg cat tta tgt gag ccg ggg gca gat ggg gct gag acc	4649
Leu Phe Met Arg His Leu Cys Glu Pro Gly Ala Asp Gly Ala Glu Thr	
1462	1467 1472 1477
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Phe Ala Asp Gly Val Pro Arg Glu Gly Leu Ser Arg Gln His Val Leu	
1478	1483 1488 1493
act aga att ggt gtt atg tct ttg att cgc aag aag gtt cag gag ttt	4745
Thr Arg Ile Gly Val Met Ser Leu Ile Arg Lys Lys Val Gln Glu Phe	
1494	1499 1504 1509
gaa cat gtt aat ggg cgc tgg agc atg cct gaa ctg gct gag gtg gag	4793
Glu His Val Asn Gly Arg Trp Ser Met Pro Glu Leu Ala Glu Val Glu	
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Glu Asn Lys Lys Met Ser Gln Pro Gly Ser Pro Ser Pro Lys Thr Pro	
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aca ccc tcc act cca ggg gac acg cag ccc aac act cct gca cct gtc	4889
Thr Pro Ser Thr Pro Gly Asp Thr Gln Pro Asn Thr Pro Ala Pro Val	
1542	1547 1552 1557
cca cct gct gaa gat ggg ata aaa ata gag gaa aat agc ctc aaa gaa	4937
Pro Pro Ala Glu Asp Gly Ile Lys Ile Glu Glu Asn Ser Leu Lys Glu	
1558	1563 1568 1573
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Glu Glu Ser Ile Glu Gly Glu Lys Glu Val Lys Ser Thr Ala Pro Glu	
1574	1579 1584 1589
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Thr Ala Ile Glu Cys Thr Gln Ala Pro Ala Pro Ala Ser Glu Asp Glu	
1590	1595 1600 1605
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Lys Val Val Val Glu Pro Pro Glu Gly Glu Glu Lys Val Glu Lys Ala	
1606	1611 1616 1621
gag gtg aag gag aga aca gag gaa cct atg gag aca gag ccc aaa ggt	5129
Glu Val Lys Glu Arg Thr Glu Glu Pro Met Glu Thr Glu Pro Lys Gly	
1622	1627 1632 1637
gct gct gat gta gag aag gtg gag gaa aag tca gca ata gat ctg acc	5177
Ala Ala Asp Val Glu Lys Val Glu Glu Lys Ser Ala Ile Asp Leu Thr	
1638	1643 1648 1653
cct att gtg gta gaa gac aaa gaa gag aag aaa gaa gaa gaa gag aaa	5225
Pro Ile Val Val Glu Asp Lys Glu Glu Lys Lys Glu Glu Glu Glu Lys	

1654	1659	1664	1669	
aaa gag gtg atg ctt cag aat gga gag acc ccc aag gac ctg aat gat				5273
Lys Glu Val Met Leu Gln Asn Gly Glu Thr Pro Lys Asp Leu Asn Asp				
1670	1675	1680	1685	
gag aaa cag aag aaa aat att aaa caa cgt ttc atg ttt aac att gca				5321
Glu Lys Gln Lys Lys Asn Ile Lys Gln Arg Phe Met Phe Asn Ile Ala				
1686	1691	1696	1701	
gat ggt ggt ttt act gag ttg cac tcc ctt tgg cag aat gaa gag cgg				5369
Asp Gly Gly Phe Thr Glu Leu His Ser Leu Trp Gln Asn Glu Glu Arg				
1702	1707	1712	1717	
gca gcc aca gtt acc aag aag act tat gag atc tgg cat cga cgg cat				5417
Ala Ala Thr Val Thr Lys Lys Thr Tyr Glu Ile Trp His Arg Arg His				
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gac tac tgg ctg cta gcc ggc att ata aac cat ggc tat gcc cgg tgg				5465
Asp Tyr Trp Leu Leu Ala Gly Ile Ile Asn His Gly Tyr Ala Arg Trp				
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Gln Asp Ile Gln Asn Asp Pro Arg Tyr Ala Ile Leu Asn Glu Pro Phe				
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Lys Gly Glu Met Asn Arg Gly Asn Phe Leu Glu Ile Lys Asn Lys Phe				
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Leu Ala Arg Arg Phe Lys Leu Leu Glu Gln Ala Leu Val Ile Glu Glu				
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Gln Leu Arg Arg Ala Ala Tyr Leu Asn Met Ser Glu Asp Pro Ser His				
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cct tcc atg gcc ctc aac acc cgc ttt gct gag gtg gag tgt ttg gcg				5705
Pro Ser Met Ala Leu Asn Thr Arg Phe Ala Glu Val Glu Cys Leu Ala				
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Glu Ser His Gln His Leu Ser Lys Glu Ser Met Ala Gly Asn Lys Pro				
1830	1835	1840	1845	
gcc aat gca gtc ctg cac aaa gtt ctg aaa cag ctg gaa gaa ctg ctg				5801
Ala Asn Ala Val Leu His Lys Val Leu Lys Gln Leu Glu Glu Leu Leu				
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agt gac atg aaa gct gat gtg act cga ctc cca gct acc att gcc cga				5849
Ser Asp Met Lys Ala Asp Val Thr Arg Leu Pro Ala Thr Ile Ala Arg				
1862	1867	1872	1877	
att ccc cca gtt gct gtg agg tta cag atg tca gag cgt aac att ctc				5897
Ile Pro Pro Val Ala Val Arg Leu Gln Met Ser Glu Arg Asn Ile Leu				
1878	1883	1888	1893	

agc cgc ctg gca aac cgg gca ccc gaa cct acc cca cag cag gta gcc 5945  
 Ser Arg Leu Ala Asn Arg Ala Pro Glu Pro Thr Pro Gln Gln Val Ala  
 1894 1899 1904 1909

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 Gln Gln Gln \*  
 1910

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 1 5

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 Gly Thr Glu Gly Gly Leu Arg Ala Ser His Gln Gln Asn Gly Asp Ala  
 10 15 20 25

ggg ggc gac gcg aag gtt gag ctg tcc ccc ggg ccc ccg aag ccg gct 207  
 Gly Gly Asp Ala Lys Val Glu Leu Ser Pro Gly Pro Pro Lys Pro Ala  
 26 31 36 41

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gca gcc cca ggc ccg ggc aag cat aag aag cgg cgg ggc gca acc agg 303

Ala	Ala	Pro	Gly	Pro	Gly	Lys	His	Lys	Lys	Arg	Arg	Gly	Ala	Thr	Arg		
58					63					68					73		
gag	cgt	gtc	gtg	ccg	ccc	ccg	aag	aag	cgg	cgg	acc	ggg	gtg	agc	ttc	351	
Glu	Arg	Val	Val	Pro	Pro	Pro	Lys	Lys	Arg	Arg	Thr	Gly	Val	Ser	Phe		
74					79					84					89		
gga	gat	gag	cac	ttt	gca	gaa	acc	agt	tat	tac	ttc	gag	ggc	ggc	ctg	399	
Gly	Asp	Glu	His	Phe	Ala	Glu	Thr	Ser	Tyr	Tyr	Phe	Glu	Gly	Gly	Leu		
90					95					100					105		
cgt	aag	gtg	cgg	ccc	tat	tac	ttt	gac	ttc	cgg	acc	tac	tgc	aaa	ggt	447	
Arg	Lys	Val	Arg	Pro	Tyr	Tyr	Phe	Asp	Phe	Arg	Thr	Tyr	Cys	Lys	Gly		
106					111					116					121		
cgc	tgg	gtg	ggc	cac	agc	ttg	ctg	cac	gtc	ttc	agt	acc	gag	ttc	cga	495	
Arg	Trp	Val	Gly	His	Ser	Leu	Leu	His	Val	Phe	Ser	Thr	Glu	Phe	Arg		
122					127					132					137		
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Ala	Gln	Pro	Leu	Ala	Tyr	Tyr	Glu	Ala	Ala	Val	Arg	Ala	Gly	Arg	Leu		
138					143					148					153		
caa	ctc	aac	gag	aag	ccg	gtg	cag	gac	ctc	aac	atc	gtg	ctc	aag	gac	591	
Gln	Leu	Asn	Glu	Lys	Pro	Val	Gln	Asp	Leu	Asn	Ile	Val	Leu	Lys	Asp		
154					159					164					169		
aat	gat	ttc	ttg	cgg	aac	aca	gtg	cac	agg	cat	gag	cca	cca	gtc	aca	639	
Asn	Asp	Phe	Leu	Arg	Asn	Thr	Val	His	Arg	His	Glu	Pro	Pro	Val	Thr		
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Ala	Glu	Pro	Ile	Arg	Leu	Leu	Ala	Glu	Asn	Glu	Asp	Val	Val	Val	Val		
186					191					196					201		
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Asn	Thr	Val	Ile	Phe	Ile	Leu	Gly	Lys	Glu	His	Gln	Leu	Lys	Glu	Leu		
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Ala	Lys	Thr	Ala	Ala	Val	Ser	Glu	Arg	Ile	His	Glu	Gln	Val	Arg	Asp		
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Arg	Gln	Leu	Glu	Lys	Glu	Tyr	Val	Cys	Arg	Val	Glu	Gly	Glu	Phe	Pro		
266					271					276					281		
act	gag	gaa	gtg	acc	tgt	aaa	gaa	ccc	atc	tta	gtg	gtg	tct	tac	aaa	975	
Thr	Glu	Glu	Val	Thr	Cys	Lys	Glu	Pro	Ile	Leu	Val	Val	Ser	Tyr	Lys		

282	287	292	297	
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Asn Lys Asn Asp Gly Leu Lys Pro Lys Gln Ala Asp Ser Val Glu Gln				
147	152	157	162	
gct gtt tat tac tgt aag aag tgc act tac cga gat cct ctt tat gaa				825
Ala Val Tyr Tyr Cys Lys Lys Cys Thr Tyr Arg Asp Pro Leu Tyr Glu				
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ata gtt agg aag cac att tac agg gaa cat ttt cag cat gtg gca gca				873
Ile Val Arg Lys His Ile Tyr Arg Glu His Phe Gln His Val Ala Ala				
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cct tac ata gca aag gca gga gaa aaa tca ctc aat ggg gca gtc ccc				921
Pro Tyr Ile Ala Lys Ala Gly Glu Lys Ser Leu Asn Gly Ala Val Pro				
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tta ggc tcg aat gcc cga gaa gag agt agt att cac tgc aag cga tgc				969
Leu Gly Ser Asn Ala Arg Glu Glu Ser Ser Ile His Cys Lys Arg Cys				
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ctt ttc atg cca aag tcc tat gaa gct ttg gta cag cat gtc atc gaa				1017
Leu Phe Met Pro Lys Ser Tyr Glu Ala Leu Val Gln His Val Ile Glu				
227	232	237	242	
gac cat gaa cgt ata ggc tat cag gtc act gcc atg att ggg cac aca				1065
Asp His Glu Arg Ile Gly Tyr Gln Val Thr Ala Met Ile Gly His Thr				
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Asn Val Val Val Pro Arg Ser Lys Pro Leu Met Leu Ile Ala Pro Lys				
259	264	269	274	
cct caa gac aag aag agc atg gga ctc cca cca agg atc ggt tcc ctt				1161
Pro Gln Asp Lys Lys Ser Met Gly Leu Pro Pro Arg Ile Gly Ser Leu				
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Ala Ser Gly Asn Val Arg Ser Leu Pro Ser Gln Gln Met Val Asn Arg				
291	296	301	306	



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Leu Ser Ile Pro Lys Pro Asn Leu Asn Ser Thr Gly Val Asn Met Met	
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Gln Gly Tyr Ser Val Gly Gln Ser Met Arg Leu Gly Leu Gly Gly Asn	
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His Leu Leu Val Thr Thr Tyr Asn Leu Arg Asp Ala Pro Ala Glu Ser	
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Pro Glu Glu Leu Ile Cys	Pro Gln Thr Thr His	Gln Thr Ala Glu Pro		
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Ala Glu Asp Asn Asn Asn	Asn Val Ala Thr Val	Pro Thr Thr Glu Gln		
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Ile Pro Ser Pro Val Ala	Glu Ala Pro Ser Pro	Gly Glu Glu Gln Val		
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cct cca gca cct ctt ccc	cct gcc agc cac cct	cct gcc acc tcc acg		2832
Pro Pro Ala Pro Leu Pro	Pro Ala Ser His Pro	Pro Ala Thr Ser Thr		
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Asn Lys Arg Thr Asn Leu	Lys Lys Pro Asn Ser	Glu Arg Thr Gly His		
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Gly Leu Arg Val Arg Phe	Asn Pro Leu Ala Leu	Leu Leu Leu Asp Ala Ser		
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Leu Glu Gly Glu Phe Asp	Leu Val Gln Arg Ile	Ile Ile Tyr Glu Val Glu		
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Asp Pro Ser Lys Pro Asn	Asp Glu Gly Ile Thr	Pro Leu His Asn Ala		
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Val Cys Ala Gly His His	His Ile Val Lys Phe	Leu Leu Asp Phe Gly		
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Val Asn Val Asn Ala Ala	Asp Ser Asp Gly Trp	Thr Pro Leu His Cys		
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gct gcc tct tgt aac agc	gtt cac ctc tgc aaa	cag ctg gtg gag agt		3168
Ala Ala Ser Cys Asn Ser	Val His Leu Cys Lys	Gln Leu Val Glu Ser		
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Gly Ala Ala Ile Phe Ala	Ser Thr Ile Ser Asp	Ile Glu Thr Ala Ala		
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gac aag tgt gag gag atg	gag gaa ggc tac atc	cag tgc tcc cag ttt		3264
Asp Lys Cys Glu Glu Met	Glu Glu Gly Tyr Ile	Gln Cys Ser Gln Phe		
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Leu Tyr Gly Val Gln Glu	Lys Leu Gly Val Met	Asn Lys Gly Val Ala		
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acctctctta ctttgactgc attgagagtg tg atg gaa aac tcc aag gtt ctg 173
Met Glu Asn Ser Lys Val Leu
1 5

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Gly Glu Ser Met Ala Gly Ile Ser Gln Asn Ala Lys Thr Gly Asp Leu
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Pro Ala Phe Gly Glu Cys Val Gly Ile Ala Ser Lys Ala Leu Cys Gly
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cct ggc agc agc cca tca cag gtc ctg tca gcc gcc aca att gtt gcc 461

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Lys His Thr Ser Ala Leu Cys Asn Ala Cys Arg Ile Ala Ser Ser Lys	
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Pro Leu Ile Leu Ala Ala Val Gly Val Ala Ser Lys Ile Leu Asp His				
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Gln Gln Gln Met Thr Val Leu Asp Gln Thr Lys Thr Leu Ala Glu Ser				
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Ala Leu Gln Met Leu Tyr Ala Ala Lys Glu Gly Gly Gly Asn Pro Lys				
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Ala Gln His Thr His Asp Ala Ile Thr Glu Ala Ala Gln Leu Met Lys				
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Glu Ala Val Asp Asp Ile Met Val Thr Leu Asn Glu Ala Ala Ser Glu				
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Tyr Gln Thr Thr Val Val Lys Tyr Ser Lys Ser Ile Ala Val Thr Ala				
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Cys Tyr Asp Gln Asn Gly Arg Leu Val Glu Thr Ser Arg Cys Asn Ser	
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Cys Tyr Asp Gly Gln Cys Tyr Glu Tyr Lys Trp Met Ala Ser Ala Trp				
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Lys Gly Ser Ser Arg Thr Val Trp Cys Gln Arg Ser Asp Gly Ile Asn				
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Val Thr Gly Gly Cys Leu Val Met Ser Gln Pro Asp Ala Asp Arg Ser				
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Cys Asn Pro Pro Cys Ser Gln Pro His Ser Tyr Cys Ser Glu Thr Lys				
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Gln Gly Asp Glu Arg Asp Met Gln Leu Ile Ala Leu Glu Gln Leu Cys	
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Met Leu Leu Leu Met Ser Asp Asn Val Asp Arg Cys Phe Glu Thr Cys	
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Pro Pro Arg Thr Phe Leu Pro Ala Leu Cys Lys Ile Phe Leu Asp Glu	
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113 118 123 128	
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Leu Ile Cys Thr Arg Glu Ser Gly Ala Val Phe Glu Ala Gly Gly Leu	
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Asn Cys Val Leu Thr Phe Ile Arg Asp Ser Gly His Leu Val His Lys	
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Asp Thr Leu His Ser Ala Met Ala Val Val Ser Arg Leu Cys Gly Lys	
161 166 171 176	
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Ser Leu Leu Lys His	Glu Asp His Gln Val	Ser Asp Gly Ala Leu Arg		
193	198	203	208	
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Cys Phe Ala Ser Leu	Ala Asp Arg Phe Thr	Arg Arg Gly Val Asp Pro		
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Ala Pro Leu Ala Lys	His Gly Leu Thr Glu	Glu Leu Leu Ser Arg Met		
225	230	235	240	
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Ala Ala Ala Gly Gly	Thr Val Ser Gly Pro	Ser Ser Ala Cys Lys Pro		
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Gly Arg Ser Thr Thr	Gly Ala Pro Ser Thr	Thr Thr Ala Asp Ser Lys Leu		
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Ser Asn Gln Val Ser	Thr Ile Asp Leu Leu	Arg Ser Glu Leu Pro Asp		
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Ser Ile Glu Ser Ala	Leu Gln Gly Asp Glu	Arg Cys Val Leu Asp Thr		
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Met Arg Leu Val Asp	Leu Leu Leu Val Leu	Leu Phe Glu Gly Arg Lys		
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Ala Leu Pro Lys Ser	Ser Ala Gly Ser Thr	Gly Arg Ile Pro Gly Leu		
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Cys Ile Arg Ser Lys	Asp Thr Asp Ala Leu	Ile Asp Ala Ile Asp Thr		
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401	406	411	416	

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His Gly Ala Asn Pro Asp Leu Arg Asp Glu Asp Gly Lys Thr Pro Leu	
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His Leu Leu Ala Leu Gln Ile Ile Arg Asp Leu Val Asp Lys Gly Gly	
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Asp Ile Phe Leu Asp Gln Leu Ala Arg Leu Gly Val Ile Ser Lys Val	
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Lys Pro Glu Lys Glu Asp Glu Pro Gln Glu Asp Ala Lys Glu Leu Gln	
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Gln Gly Lys Pro Tyr His Trp Arg Asp Trp Ser Ile Ile Arg Gly Arg	
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Asp Asn Ser Ala Leu Asn	Cys His Ser Asn Asp	Asp Lys Asn Ala Trp		
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Phe Ala Ile Asp Leu Gly	Leu Trp Val Ile Pro	Ser Ala Tyr Thr Leu		
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cgt cat gct cgt ggt tat	gga agg tct gca ctg	aga aat tgg gtt ttc		3456
Arg His Ala Arg Gly Tyr	Gly Arg Ser Ala Leu	Arg Asn Trp Val Phe		
1137	1142	1147	1152	
cag gta tcc aaa gat gga	cag aac tgg act tct	ttg tat acc cat gtt		3504
Gln Val Ser Lys Asp Gly	Gln Asn Trp Thr Ser	Leu Tyr Thr His Val		
1153	1158	1163	1168	
gat gac tgc agt ctc aat	gaa cca ggg tca act	gca act tgg cct ctt		3552
Asp Asp Cys Ser Leu Asn	Glu Pro Gly Ser Thr	Ala Thr Trp Pro Leu		
1169	1174	1179	1184	
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Asp Pro Pro Lys Asp Glu	Lys Gln Gly Trp Arg	His Val Arg Ile Lys		
1185	1190	1195	1200	
cag atg ggg aaa aat gcc	agt gga caa aca cac	tac ctc tca tta tct		3648
Gln Met Gly Lys Asn Ala	Ser Gly Gln Thr His	Tyr Leu Ser Leu Ser		
1201	1206	1211	1216	
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Gly Phe Glu Leu Tyr Gly	Thr Val Asn Gly Val	Cys Glu Asp Gln Leu		
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Gly Lys Ala Ala Lys Glu	Ala Glu Ala Asn Leu	Arg Arg Gln Arg Arg		
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cta gta cgt tcc cag gtt	ctg aaa tac atg gtt	cca gga gct cgt gtt		3792
Leu Val Arg Ser Gln Val	Leu Lys Tyr Met Val	Pro Gly Ala Arg Val		
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Ile Arg Gly Leu Asp Trp	Lys Trp Arg Asp Gln	Asp Gly Ser Pro Gln		
1265	1270	1275	1280	
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Gly Glu Gly Thr Val Thr	Gly Glu Leu His Asn	Gly Trp Ile Asp Val		
1281	1286	1291	1296	
acc tgg gat gct ggt ggc	tca aac tct tac cgt	atg ggc gca gaa gga		3936
Thr Trp Asp Ala Gly Gly	Ser Asn Ser Tyr Arg	Met Gly Ala Glu Gly		
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Lys Phe Asp Leu Lys Leu	Ala Pro Gly Tyr Asp	Pro Asp Thr Val Ala		
1313	1318	1323	1328	

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Ser Pro Lys Pro Val Ser Ser Thr Val Ser Gly Thr Thr Gln Ser Trp	
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Ser Ser Leu Val Lys Asn Asn Cys Pro Asp Lys Thr Ser Ala Ala Ala	
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Gly Ser Ser Ser Arg Lys Gly Ser Ser Ser Ser Val Cys Ser Val Ala	
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Ser Ser Ser Asp Ile Ser Leu Gly Ser Thr Lys Thr Glu Arg Arg Ser	
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Glu Ile Val Met Glu His Ser Ile Val Ser Gly Ala Asp Val His Glu	
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Pro Ile Val Val Leu Ser Ser Ala Glu Asn Val Pro Gln Thr Glu Val	
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Gly Ser Ser Ser Ser Ala Ser Thr Ser Thr Leu Thr Ala Glu Thr Gly	
1425 1430 1435 1440	
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Ser Glu Asn Ala Glu Arg Lys Leu Gly Pro Asp Ser Ser Val Arg Thr	
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Pro Gly Glu Ser Ser Ala Ile Ser Met Gly Ile Val Ser Val Ser Ser	
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Pro Asp Val Ser Ser Val Ser Glu Leu Thr Asn Lys Glu Ala Ala Ser	
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Leu Glu Ile Pro Pro Pro Gly Thr Pro His Ser Glu Leu Leu Glu Glu	
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Val Glu Cys Thr Pro Ser Pro Arg Leu Ala Leu Thr Leu Lys Val Thr	
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Gly Leu Gly Thr Thr Arg Glu Val Glu Leu Pro Leu Thr Asn Phe Arg	
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Ser Thr Ile Phe Tyr Tyr Val Gln Lys Leu Leu Gln Leu Ser Cys Asn	
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Thr Ile Met Tyr Arg Glu Met Lys Asp Ser Asp Lys Glu Lys Glu Asn	
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Gly Lys Met Gly Cys Trp Ser Ile Glu His Val Glu Gln Tyr Leu Gly	
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Thr Asp Glu Leu Pro Lys Asn Asp Leu Ile Thr Tyr Leu Gln Lys Asn	
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Gln Ala Lys Ala Gly Asn Gly Gln Asn Ser Cys Gly Val Glu Asp Val	
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Ile Glu Glu Pro Leu Ala Leu Ala Ser Gly Ala Leu Pro Asp Trp Cys				
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Glu Gln Leu Thr Ser Lys Cys Pro Phe Leu Ile Pro Phe Glu Thr Arg				
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Gln Leu Tyr Phe Thr Cys Thr Ala Phe Gly Ala Ser Arg Ala Ile Val				
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Trp Leu Gln Asn Arg Arg Glu Ala Thr Val Glu Arg Thr Arg Thr Thr				
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Lys His Glu Arg Val Lys Val Pro Arg Gly Glu Ser Leu Met Glu Trp				
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Ala Glu Asn Val Met Gln Ile His Ala Asp Arg Lys Ser Val Leu Glu				
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Val Glu Phe Leu Gly Glu Glu Gly Thr Gly Leu Gly Pro Thr Leu Glu				
2145	2150	2155	2160	
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Phe Tyr Ala Leu Val Ala Ala Glu Phe Gln Arg Thr Asp Leu Gly Ala				
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Trp Leu Cys Asp Asp Asn Phe Pro Asp Asp Glu Ser Arg His Val Asp				
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ctt gga ggt gga ttg aaa cct cct gga tat tat gtg cag agg tca tgt				6624
Leu Gly Gly Gly Leu Lys Pro Pro Gly Tyr Tyr Val Gln Arg Ser Cys				
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Gly Leu Phe Thr Ala Pro Phe Pro Gln Asp Ser Asp Glu Leu Glu Arg				
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Ile Thr Lys Leu Phe His Phe Leu Gly Ile Phe Leu Ala Lys Cys Ile				
2225	2230	2235	2240	

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Gln Asp Asn Arg Leu Val Asp Leu Pro Ile Ser Lys Pro Phe Phe Lys	
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2257 2262 2267 2272	
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2449 2454 2459 2464	





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 Thr Ala Met Val Glu Leu Ile Asn Lys Asp Tyr Ala Asp Phe Val Asn  
 58 63 68 73  
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 Leu Ser Thr Asn Leu Val Gly Met Asp Lys Ala Leu Asn Gln Leu Ser  
 74 79 84 89  
 gtg cct ttg gga caa tta cga gaa gag gtt ctg agc ctt aga tcg tct 400  
 Val Pro Leu Gly Gln Leu Arg Glu Glu Val Leu Ser Leu Arg Ser Ser  
 90 95 100 105  
 gtc agt gaa gga att cgg gca gtt gat gaa cga atg tct aaa caa gag 448  
 Val Ser Glu Gly Ile Arg Ala Val Asp Glu Arg Met Ser Lys Gln Glu  
 106 111 116 121  
 gac att agg aaa aaa aag atg tgt gta ttg agg ctt ata caa gtt att 496  
 Asp Ile Arg Lys Lys Lys Met Cys Val Leu Arg Leu Ile Gln Val Ile  
 122 127 132 137  
 cgg tca gtt gag aaa att gaa aaa atc tta aac tct caa agt tct aaa 544  
 Arg Ser Val Glu Lys Ile Glu Lys Ile Leu Asn Ser Gln Ser Ser Lys

138	143	148	153	
gaa acc tct gca cta	gaa gca agc agc ccc	ctt ttg act gga caa att		592
Glu Thr Ser Ala Leu	Glu Ala Ser Ser Pro	Leu Leu Thr Gly Gln Ile		
154	159	164	169	
ttg gag aga att gcc	aca gaa ttt aat cag	tta cag ttt cat gct gtt		640
Leu Glu Arg Ile Ala	Thr Glu Phe Asn Gln	Leu Gln Phe His Ala Val		
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caa agc aaa ggc atg	cct ctt ttg gac aaa	gta aga ccg cgt ata gct		688
Gln Ser Lys Gly Met	Pro Leu Leu Asp Lys	Val Arg Pro Arg Ile Ala		
186	191	196	201	
ggc att aca gcc atg	tta cag cag tca ctg	gaa ggt ctc cta tta gaa		736
Gly Ile Thr Ala Met	Leu Gln Gln Ser Leu	Glu Gly Leu Leu Leu Glu		
202	207	212	217	
ggc ctt cag acg tct	gac gtc gat ata ata	cgg cac tgc ttg cgg act		784
Gly Leu Gln Thr Ser	Asp Val Asp Ile Ile	Arg His Cys Leu Arg Thr		
218	223	228	233	
tac gcc acg att gac	aag aca cgg gac gcg	gag gcc tta gtt ggc caa		832
Tyr Ala Thr Ile Asp	Lys Thr Arg Asp Ala	Glu Ala Leu Val Gly Gln		
234	239	244	249	
gta cta gtg aaa cca	tac ata gac gag gtg	att ata gag cag ttt gtt		880
Val Leu Val Lys Pro	Tyr Ile Asp Glu Val	Ile Ile Glu Gln Phe Val		
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Glu Ser His Pro Asn	Gly Leu Gln Val Met	Tyr Asn Lys Leu Leu Glu		
266	271	276	281	
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Phe Val Pro His His	Cys Arg Leu Leu Arg	Glu Val Thr Gly Gly Ala		
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Ile Ser Ser Glu Lys	Gly Asn Thr Val Pro	Gly Tyr Asp Phe Leu Val		
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Asn Ser Val Trp Pro	Gln Ile Val Gln Gly	Leu Glu Glu Lys Leu Pro		
314	319	324	329	
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Ser Leu Phe Asn Pro	Gly Asn Pro Asp Ala	Phe His Glu Lys Tyr Thr		
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ata agt atg gat ttt	gtc aga aga ttg gaa	cgg cag tgt gga tca cag		1168
Ile Ser Met Asp Phe	Val Arg Arg Leu Glu	Arg Gln Cys Gly Ser Gln		
346	351	356	361	
gct agt gta aag aga	tta aga gcc cat cct	gcc tat cac agc ttc aat		1216
Ala Ser Val Lys Arg	Leu Arg Ala His Pro	Ala Tyr His Ser Phe Asn		
362	367	372	377	

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Lys Lys Trp Asn Leu Pro Val Tyr Phe Gln Ile Arg Phe Arg Glu Ile	
378 383 388 393	
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Ala Gly Ser Leu Glu Ala Ala Leu Thr Asp Val Leu Glu Asp Ala Pro	
394 399 404 409	
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Ala Glu Ser Pro Tyr Cys Leu Leu Ala Ser His Arg Thr Trp Ser Ser	
410 415 420 425	
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Leu Arg Arg Cys Trp Ser Asp Glu Met Phe Leu Pro Leu Leu Val His	
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Arg Leu Trp Arg Leu Thr Leu Gln Ile Leu Ala Arg Tyr Ser Val Phe	
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Val Asn Glu Leu Ser Leu Arg Pro Ile Ser Asn Glu Ser Pro Lys Glu	
458 463 468 473	
atc aag aaa cct ttg gta act ggt agc aaa gaa cct tcc atc acc caa	1552
Ile Lys Lys Pro Leu Val Thr Gly Ser Lys Glu Pro Ser Ile Thr Gln	
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Gly Asn Thr Glu Asp Gln Gly Ser Gly Pro Ser Glu Thr Lys Pro Val	
490 495 500 505	
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Val Ser Ile Ser Arg Thr Gln Leu Val Tyr Val Val Ala Asp Leu Asp	
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Lys Leu Gln Glu Gln Leu Pro Glu Leu Leu Glu Ile Ile Lys Pro Lys	
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Leu Glu Met Ile Gly Phe Lys Asn Phe Ser Ser Ile Ser Ala Ala Leu	
538 543 548 553	
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Glu Asp Ser Gln Ser Ser Phe Ser Ala Cys Val Pro Ser Leu Ser Ser	
554 559 564 569	
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Lys Ile Ile Gln Asp Leu Ser Asp Ser Cys Phe Gly Phe Leu Lys Ser	
570 575 580 585	
gcc ctg gag gtt ccc agg ctt tac cga aga acc aat aag gag gtc cca	1888
Ala Leu Glu Val Pro Arg Leu Tyr Arg Arg Thr Asn Lys Glu Val Pro	
586 591 596 601	

acc aca gct tcc tcc tat gtg gac agt gct ctg aag ccc tta ttc cag	1936
Thr Thr Ala Ser Ser Tyr Val Asp Ser Ala Leu Lys Pro Leu Phe Gln	
602 607 612 617	
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Leu Gln Ser Gly His Lys Asp Lys Leu Lys Gln Ala Ile Ile Gln Gln	
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Trp Leu Glu Gly Thr Leu Ser Glu Ser Thr His Lys Tyr Tyr Glu Thr	
634 639 644 649	
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Val Ser Asp Val Leu Asn Ser Val Lys Lys Met Glu Glu Ser Leu Lys	
650 655 660 665	
agg ctg aaa caa gcc aga aaa acc act ccc gcc aac ccc gtc ggt ccc	2128
Arg Leu Lys Gln Ala Arg Lys Thr Thr Pro Ala Asn Pro Val Gly Pro	
666 671 676 681	
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Ser Gly Gly Met Ser Asp Asp Asp Lys Ile Arg Leu Gln Leu Ala Leu	
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Asp Val Glu Tyr Leu Gly Glu Gln Ile Gln Lys Leu Gly Leu Gln Ala	
698 703 708 713	
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Ser Asp Ile Lys Ser Phe Ser Ala Leu Ala Glu Leu Val Ala Ala Ala	
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Lys Asp Gln Ala Thr Ala Glu Gln Pro *	
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 Met Ser Trp Glu  
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 tcc ggg gcc ggg cca ggt cta ggt tcc cag ggg atg gat ctc gtg tgg 164  
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 agt gcg tgg tac gga aag tgc gtt aaa ggg aaa ggg tcg ttg cca ctc 212  
 Ser Ala Trp Tyr Gly Lys Cys Val Lys Gly Lys Gly Ser Leu Pro Leu  
 21 26 31 36  
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 Ser Ala His Gly Ile Val Val Ala Trp Leu Ser Arg Ala Glu Trp Asp  
 37 42 47 52  
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 Gln Val Thr Val Tyr Leu Phe Cys Asp Asp His Lys Leu Gln Arg Tyr  
 53 58 63 68  
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 Ala Leu Asn Arg Ile Thr Val Trp Arg Ser Arg Ser Gly Asn Glu Leu  
 69 74 79 84  
 cct ctg gca gtg gct tct act gct gac ctg ata cgc tgt aag ctc ttg 404  
 Pro Leu Ala Val Ala Ser Thr Ala Asp Leu Ile Arg Cys Lys Leu Leu  
 85 90 95 100  
 gat gta act ggt ggc ttg ggc act gat gaa ctt aga ctg ctc tat ggc 452  
 Asp Val Thr Gly Gly Leu Gly Thr Asp Glu Leu Arg Leu Leu Tyr Gly  
 101 106 111 116  
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 Met Ala Leu Val Arg Phe Val Asn Leu Ile Ser Glu Arg Lys Thr Lys  
 117 122 127 132  
 ttt gcc aag gtc ccc ctc aag tgt ctg gct caa gag gta aat att ccg 548  
 Phe Ala Lys Val Pro Leu Lys Cys Leu Ala Gln Glu Val Asn Ile Pro  
 133 138 143 148  
 gat tgg att gtt gac ctt cgc cat gag ttg acc cac aag aaa atg ccc 596  
 Asp Trp Ile Val Asp Leu Arg His Glu Leu Thr His Lys Lys Met Pro  
 149 154 159 164



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His	Ile	Asn	Asp	Cys	Arg	Arg	Gly	Cys	Tyr	Phe	Val	Leu	Asp	Trp	Leu	
165					170					175					180	
cag	aag	acc	tat	tgg	tgc	cgc	caa	ctg	gag	aac	agc	ctg	aga	gag	acc	692
Gln	Lys	Thr	Tyr	Trp	Cys	Arg	Gln	Leu	Glu	Asn	Ser	Leu	Arg	Glu	Thr	
181					186					191					196	
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Trp	Glu	Leu	Glu	Glu	Phe	Arg	Glu	Gly	Ile	Glu	Glu	Glu	Asp	Gln	Glu	
197					202					207					212	
gaa	gat	aag	aac	att	gtt	gtt	gat	gac	atc	aca	gaa	cag	aaa	cca	gag	788
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Pro	Gln	Asp	Asp	Gly	Lys	Ser	Thr	Glu	Ser	Asp	Val	Lys	Ala	Asp	Gly	
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Asp	Ser	Lys	Gly	Ser	Glu	Glu	Val	Asp	Ser	His	Cys	Lys	Lys	Ala	Leu	
245					250					255					260	
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Ser	His	Lys	Glu	Leu	Tyr	Glu	Arg	Ala	Arg	Glu	Leu	Leu	Val	Ser	Tyr	
261					266					271					276	
gaa	gag	gag	cag	ttt	acg	gtg	ctg	gag	aaa	ttt	agg	tat	tta	cct	aag	980
Glu	Glu	Glu	Gln	Phe	Thr	Val	Leu	Glu	Lys	Phe	Arg	Tyr	Leu	Pro	Lys	
277					282					287					292	
gcc	att	aag	gcg	tgg	aat	aac	ccg	tcc	cca	cgt	gta	gaa	tgt	gtc	ctg	1028
Ala	Ile	Lys	Ala	Trp	Asn	Asn	Pro	Ser	Pro	Arg	Val	Glu	Cys	Val	Leu	
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gca	gag	ctc	aag	ggc	gtt	aca	tgc	gag	aac	agg	gag	gct	gtg	ctg	gat	1076
Ala	Glu	Leu	Lys	Gly	Val	Thr	Cys	Glu	Asn	Arg	Glu	Ala	Val	Leu	Asp	
309					314					319					324	
gct	ttt	ctg	gat	gat	ggc	ttc	ctt	gtc	ccc	aca	ttt	gaa	cag	ttg	gca	1124
Ala	Phe	Leu	Asp	Asp	Gly	Phe	Leu	Val	Pro	Thr	Phe	Glu	Gln	Leu	Ala	
325					330					335					340	
gct	ttg	cag	ata	gaa	tat	gaa	gaa	aac	gtg	gac	ttg	aat	gac	gtc	ctg	1172
Ala	Leu	Gln	Ile	Glu	Tyr	Glu	Glu	Asn	Val	Asp	Leu	Asn	Asp	Val	Leu	
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gtg	cca	aag	ccg	ttc	tct	cag	ttc	tgg	cag	ccc	ctg	ctc	agg	ggc	ctg	1220
Val	Pro	Lys	Pro	Phe	Ser	Gln	Phe	Trp	Gln	Pro	Leu	Leu	Arg	Gly	Leu	
357					362					367					372	
cac	tcc	cag	aac	ttc	acg	cag	gcc	cta	ttg	gag	agg	atg	ctc	tct	gaa	1268
His	Ser	Gln	Asn	Phe	Thr	Gln	Ala	Leu	Leu	Glu	Arg	Met	Leu	Ser	Glu	
373					378					383					388	

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Leu Pro Ala Leu Gly Ile Ser Gly Ile Arg Pro Thr Tyr Ile Leu Arg	
389 394 399 404	
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Trp Thr Val Glu Leu Ile Val Ala Asn Thr Lys Thr Gly Arg Asn Ala	
405 410 415 420	
cgc cga ttt tct gca ggc cag tgg gaa gca aga agg ggc tgg agg ctg	1412
Arg Arg Phe Ser Ala Gly Gln Trp Glu Ala Arg Arg Gly Trp Arg Leu	
421 426 431 436	
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Phe Asn Cys Ser Ala Ser Leu Asp Trp Pro Arg Met Val Glu Ser Cys	
437 442 447 452	
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Leu Gly Ser Pro Cys Trp Ala Ser Pro Gln Leu Leu Arg Ile Ile Phe	
453 458 463 468	
aaa gcc atg ggg cag ggc ctg cca gac gag gag cag gag aag ctg ctg	1556
Lys Ala Met Gly Gln Gly Leu Pro Asp Glu Glu Gln Glu Lys Leu Leu	
469 474 479 484	
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Arg Ile Cys Ser Ile Tyr Thr Gln Ser Gly Glu Asn Ser Leu Val Gln	
485 490 495 500	
gag ggc tct gag gcc tcc ccc att ggg aag tct cca tat aca cta gac	1652
Glu Gly Ser Glu Ala Ser Pro Ile Gly Lys Ser Pro Tyr Thr Leu Asp	
501 506 511 516	
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Ser Leu Tyr Trp Ser Val Lys Pro Ala Ser Ser Ser Phe Gly Ser Glu	
517 522 527 532	
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Ala Lys Ala Gln Gln Gln Glu Glu Gln Gly Ser Val Asn Asp Val Lys	
533 538 543 548	
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549 554 559 564	
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Glu Glu Glu Asn Asp Asp Gln Glu Glu Glu Glu Glu Asp Glu Asp Asp	
565 570 575 580	
gaa gat gat gaa gag gaa gac aga atg gag gtg ggg cct ttc tct aca	1892
Glu Asp Asp Glu Glu Glu Asp Arg Met Glu Val Gly Pro Phe Ser Thr	
581 586 591 596	
ggg caa gag tcc ccc act gcc gag aat gct agg ctt ctg gcc cag aaa	1940
Gly Gln Glu Ser Pro Thr Ala Glu Asn Ala Arg Leu Leu Ala Gln Lys	
597 602 607 612	
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Arg Gly Ala Leu Gln Gly Ser Ala Trp Gln Val Ser Ser Glu Asp Val	
613 618 623 628	
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Arg Trp Asp Thr Phe Pro Leu Gly Arg Met Pro Gly Gln Thr Glu Asp	
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cca gca gag ctc atg ctg gag aat tat gac acc atg tat ctt ttg gac	2084
Pro Ala Glu Leu Met Leu Glu Asn Tyr Asp Thr Met Tyr Leu Leu Asp	
645 650 655 660	
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Gln Pro Val Leu Glu Gln Arg Leu Glu Pro Ser Thr Cys Lys Thr Asp	
661 666 671 676	
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Thr Leu Gly Leu Ser Cys Gly Val Gly Ser Gly Asn Cys Ser Asn Ser	
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Ser Ser Ser Asn Phe Glu Gly Leu Leu Trp Ser Gln Gly Gln Leu His	
693 698 703 708	
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Gly Leu Lys Thr Gly Leu Gln Leu Phe *	
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Met Ser Trp Glu	
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Ser Gly Ala Gly Pro Gly Leu Gly Ser Gln Gly Met Asp Leu Val Trp	
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Ser	Ala	Trp	Tyr	Gly	Lys	Cys	Val	Lys	Gly	Lys	Gly	Ser	Leu	Pro	Leu	
21					26					31					36	
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Ser	Ala	His	Gly	Ile	Val	Val	Ala	Trp	Leu	Ser	Arg	Ala	Glu	Trp	Asp	
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cag	gtg	acg	gtt	tat	ctg	ttc	tgt	gac	gac	cat	aag	ttg	cag	cgg	tac	308
Gln	Val	Thr	Val	Tyr	Leu	Phe	Cys	Asp	Asp	His	Lys	Leu	Gln	Arg	Tyr	
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gcg	ctt	aac	cgc	atc	acg	gtg	tgg	agg	agc	agg	tca	ggc	aac	gaa	ctc	356
Ala	Leu	Asn	Arg	Ile	Thr	Val	Trp	Arg	Ser	Arg	Ser	Gly	Asn	Glu	Leu	
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Pro	Leu	Ala	Val	Ala	Ser	Thr	Ala	Asp	Leu	Ile	Arg	Cys	Lys	Leu	Leu	
85					90					95					100	
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Asp	Val	Thr	Gly	Gly	Leu	Gly	Thr	Asp	Glu	Leu	Arg	Leu	Leu	Tyr	Gly	
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Met	Ala	Leu	Val	Arg	Phe	Val	Asn	Leu	Ile	Ser	Glu	Arg	Lys	Thr	Lys	
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Asp	Trp	Ile	Val	Asp	Leu	Arg	His	Glu	Leu	Thr	His	Lys	Lys	Met	Pro	
149					154					159					164	
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His	Ile	Asn	Asp	Cys	Arg	Arg	Gly	Cys	Tyr	Phe	Val	Leu	Asp	Trp	Leu	
165					170					175					180	
cag	aag	acc	tat	tgg	tgc	cgc	caa	ctg	gag	aac	agc	ctg	aga	gag	acc	692
Gln	Lys	Thr	Tyr	Trp	Cys	Arg	Gln	Leu	Glu	Asn	Ser	Leu	Arg	Glu	Thr	
181					186					191					196	
tgg	gag	ttg	gag	gag	ttc	agg	gaa	ggg	ata	gag	gaa	gag	gat	caa	gag	740
Trp	Glu	Leu	Glu	Glu	Phe	Arg	Glu	Gly	Ile	Glu	Glu	Glu	Asp	Gln	Glu	
197					202					207					212	
gaa	gat	aag	aac	att	gtt	gtt	gat	gac	atc	aca	gaa	cag	aaa	cca	gag	788
Glu	Asp	Lys	Asn	Ile	Val	Val	Asp	Asp	Ile	Thr	Glu	Gln	Lys	Pro	Glu	
213					218					223					228	
cct	cag	gat	gat	ggg	aaa	agt	acg	gag	tca	gat	gta	aag	gcc	gat	gga	836
Pro	Gln	Asp	Asp	Gly	Lys	Ser	Thr	Glu	Ser	Asp	Val	Lys	Ala	Asp	Gly	
229					234					239					244	
gac	agc	aaa	ggc	agc	gaa	gag	gtg	gat	tct	cat	tgc	aaa	aag	gcc	ctg	884
Asp	Ser	Lys	Gly	Ser	Glu	Glu	Val	Asp	Ser	His	Cys	Lys	Lys	Ala	Leu	

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Ser His Lys Glu Leu Tyr Glu Arg Ala Arg Glu Leu Leu Val Ser Tyr				
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Glu Glu Glu Gln Phe Thr Val Leu Glu Lys Phe Arg Tyr Leu Pro Lys				
277	282	287	292	
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Ala Ile Lys Ala Trp Asn Asn Pro Ser Pro Arg Val Glu Cys Val Leu				
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Ala Glu Leu Lys Gly Val Thr Cys Glu Asn Arg Glu Ala Val Leu Asp				
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Ala Phe Leu Asp Asp Gly Phe Leu Val Pro Thr Phe Glu Gln Leu Ala				
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Ala Leu Gln Ile Glu Tyr Glu Asp Gly Gln Thr Glu Val Gln Arg Gly				
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gaa ggt act gac cca aag tca cac aaa aac gtg gac ttg aat gac gtc				1220
Glu Gly Thr Asp Pro Lys Ser His Lys Asn Val Asp Leu Asn Asp Val				
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Leu Val Pro Lys Pro Phe Ser Gln Phe Trp Gln Pro Leu Leu Arg Gly				
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Leu His Ser Gln Asn Phe Thr Gln Ala Leu Leu Glu Arg Met Leu Ser				
389	394	399	404	
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Glu Leu Pro Ala Leu Gly Ile Ser Gly Ile Arg Pro Thr Tyr Ile Leu				
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Ala Arg Arg Phe Ser Ala Gly Gln Trp Glu Ala Arg Arg Gly Trp Arg				
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Leu Phe Asn Cys Ser Ala Ser Leu Asp Trp Pro Arg Met Val Glu Ser				
453	458	463	468	
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Cys Leu Gly Ser Pro Cys Trp Ala Ser Pro Gln Leu Leu Arg Ile Ile				
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Phe Lys Ala Met Gly Gln Gly Leu Pro Asp Glu Glu Gln Glu Lys Leu	
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tgc ttc acc aga ctg gca cac cag ctc cca aac ttg caa aaa ctc ttt				2055
Cys Phe Thr Arg Leu Ala His Gln Leu Pro Asn Leu Gln Lys Leu Phe				
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ctt aca gct aat aga tct gtg tgt gac aca gac att gat gaa ttg gca				2103
Leu Thr Ala Asn Arg Ser Val Cys Asp Thr Asp Ile Asp Glu Leu Ala				
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tgt aat tgt acc agg tta cag cag ctg gac ata tta gga aca aga atg				2151
Cys Asn Cys Thr Arg Leu Gln Gln Leu Asp Ile Leu Gly Thr Arg Met				
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Val Ser Pro Ala Ser Leu Arg Lys Leu Leu Glu Ser Cys Lys Asp Leu				
572	577	582	587	
tct tta ctt gat gtg tcc ttc tgt tgc cag att gat aac aga gct gtg				2247
Ser Leu Leu Asp Val Ser Phe Cys Ser Gln Ile Asp Asn Arg Ala Val				
588	593	598	603	
cta gaa ctg aat gca agc ttt cca aaa gtg ttc ata aaa aag agc ttt				2295
Leu Glu Leu Asn Ala Ser Phe Pro Lys Val Phe Ile Lys Lys Ser Phe				
604	609	614	619	
act cag tga ctttaata tatgtttctgt attaaaatta atgtgctttg ttgggggttta				2351
Thr Gln *				
620				
attttgggat tgggttttggg ttttgttttt agttgtttta atggtaagaa ttaagacatt				2411
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cagggtacat qqatgaatgc caacttttgc atttcccatg tgtatcctgt gaccattcta 360

tctgggaaca tccttcaaag agttcatgca tcttactgag gacacctgac cttttgaagc 420

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Met Ser Pro Val Phe Pro Met Leu Thr Val Leu  
1 5

acc atg ttt tat tat ata tgc ctt cgg cgc cga gcc agg aca gct aca 519

Thr Met Phe Tyr Tyr Ile Cys Leu Arg Arg Arg Ala Arg Thr Ala Thr  
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Arg	Gly	Glu	Met	Met	Asn	Thr	His	Arg	Ala	Ile	Glu	Ser	Asn	Ser	Gln
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Thr Ser Pro Leu Asn Ala Glu Val Val Gln Tyr Ala Lys Glu Val Val  
44 49 54 59

gat ttc agt tcc cat tat gga agt gag aat agt atg tcc tat act atg 663

Asp Phe Ser Ser His Tyr Gly Ser Glu Asn Ser Met Ser Tyr Thr Met  
60 65 70 75

tgg aat ttg gct ggt gta cca aat gta ttc cca agt tct ggt gac ttt 711

Trp	Asn	Leu	Ala	Gly	Val	Pro	Asn	Val	Phe	Pro	Ser	Ser	Gly	Asp	Phe
76					81					86					91

act cag aca gct gtg ttt cga act tat ggg aca tgg tgg gat cag tgt 755





316	321	326	331	
cta gat gac act tct ctg gaa ttt cta cag tct cgc tgc act ctt gtc				1479
Leu Asp Asp Thr Ser Leu Glu Phe Leu Gln Ser Arg Cys Thr Leu Val				
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cag tgg ctt aat tta tct tgg act ggc aat aga ggc ttc atc tct gtt				1527
Gln Trp Leu Asn Leu Ser Trp Thr Gly Asn Arg Gly Phe Ile Ser Val				
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Ala Gly Phe Ser Arg Phe Leu Lys Val Cys Gly Ser Glu Leu Val Arg				
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Leu Glu Leu Ser Cys Ser His Phe Leu Asn Glu Thr Cys Leu Glu Val				
380	385	390	395	
att tct gag atg tgt cca aat cta cag gcc tta aat ctc tcc tcc tgt				1671
Ile Ser Glu Met Cys Pro Asn Leu Gln Ala Leu Asn Leu Ser Ser Cys				
396	401	406	411	
gat aag cta cca cct caa gct ttc aac cac att gcc aag tta tgc agc				1719
Asp Lys Leu Pro Pro Gln Ala Phe Asn His Ile Ala Lys Leu Cys Ser				
412	417	422	427	
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Leu Lys Arg Leu Val Leu Tyr Arg Thr Lys Val Glu Ile Glu Asp Tyr				
428	433	438	443	
gat gtg ata gct agc atg ata gga gcc aag tgt aaa aaa ctc cgg acc				1815
Asp Val Ile Ala Ser Met Ile Gly Ala Lys Cys Lys Lys Leu Arg Thr				
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Leu Asp Leu Trp Arg Cys Lys Asn Ile Thr Glu Asn Gly Ile Ala Glu				
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Leu Ala Ser Gly Cys Pro Leu Leu Glu Glu Leu Asp Leu Gly Trp Cys				
476	481	486	491	
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Pro Thr Leu Gln Ser Ser Thr Gly Cys Phe Thr Arg Leu Ala His Gln				
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Leu Pro Asn Leu Gln Lys Leu Phe Leu Thr Ala Asn Arg Ser Val Cys				
508	513	518	523	
gac aca gac att gat gaa ttg gca tgt aat tgt acc agg tta cag cag				2055
Asp Thr Asp Ile Asp Glu Leu Ala Cys Asn Cys Thr Arg Leu Gln Gln				
524	529	534	539	
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Leu Leu Glu Ser Cys Lys Asp Leu Ser Leu Leu Asp Val Ser Phe Cys	
556 561 566 571	
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Ser Gln Ile Asp Asn Arg Ala Val Leu Glu Leu Asn Ala Ser Phe Pro	
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Lys Val Phe Ile Lys Lys Ser Phe Thr Gln *	
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185	190	195	200	
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agt ggt gag aat gca tct gga aaa tac tgt ggg aaa acc caa acc atc				1023
Ser Gly Glu Asn Ala Ser Gly Lys Tyr Cys Gly Lys Thr Gln Thr Ile				
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Phe Leu Lys Tyr Pro Gln Glu Lys Asn Asn Gly Pro Lys Val Pro Val				
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gag ttg cga gtg aac atc tgg cta ggc tta agt gct gtg gag aag aag				1119
Glu Leu Arg Val Asn Ile Trp Leu Gly Leu Ser Ala Val Glu Lys Lys				
249	254	259	264	
ttt aac agc ttc gca gaa gga act ttc acc gtc ttt gct gaa atg tat				1167
Phe Asn Ser Phe Ala Glu Gly Thr Phe Thr Val Phe Ala Glu Met Tyr				
265	270	275	280	
gaa aat caa gct ctc atg ttt gga aaa tgg ggt act tct gga tta gta				1215
Glu Asn Gln Ala Leu Met Phe Gly Lys Trp Gly Thr Ser Gly Leu Val				
281	286	291	296	
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Gly Arg His Lys Phe Ser Asp Val Thr Gly Lys Ile Lys Leu Lys Arg				
297	302	307	312	
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Glu Phe Phe Leu Pro Pro Lys Gly Trp Glu Trp Glu Gly Glu Trp Ile				
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Glu Phe Thr Asp Glu Val Tyr Gln Asn Glu Ser Arg Tyr Pro Gly Gly				
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393	398	403	408	
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Trp Glu Tyr Gly Ile Thr Ile Pro Pro Asp His Lys Pro Lys Ser Trp				
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Asp Gly Asp Glu Lys Ser Leu Glu Lys Gln Lys His Ser Ala Thr Thr	
521 526 531 536	
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537 542 547 552	
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Tyr Ile Tyr His Leu Arg Cys Tyr Val Tyr Gln Ala Arg Asn Leu Leu	
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Ala Leu Asp Lys Asp Ser Phe Ser Asp Pro Phe Ala His Ile Cys Phe	
569 574 579 584	
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Leu His Arg Ser Lys Thr Thr Glu Ile Ile His Ser Thr Leu Asn Pro	
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Thr Ile Glu Arg Leu Asp Arg Phe Arg Cys Asp Pro Tyr Ala Gly Lys	
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Cys Arg Asp Ile Val Ile Glu Met Glu Asp Thr Lys Pro Leu Leu Ala	
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Phe Glu Ala Asn Lys Ile Leu His Gln His Leu Gly Ala Pro Glu Glu				
1145	1150	1155	1160	
cgg ctt gct ctt cac atc ctc agg act cag ggg ctg gtc cct gag cac				3855
Arg Leu Ala Leu His Ile Leu Arg Thr Gln Gly Leu Val Pro Glu His				
1161	1166	1171	1176	
gtg gaa aca agg act ttg cac agc acc ttc cag ccc aac att tcc aga				3903
Val Glu Thr Arg Thr Leu His Ser Thr Phe Gln Pro Asn Ile Ser Arg				
1177	1182	1187	1192	
tac tac ctg cgt gtg atc atc tgg aac acc aag gac gtt atc ttg gac				3951
Tyr Tyr Leu Arg Val Ile Ile Trp Asn Thr Lys Asp Val Ile Leu Asp				
1193	1198	1203	1208	
gag aaa agc atc aca gga gag gaa atg agt gac atc tac gtc aaa ggc				3999
Glu Lys Ser Ile Thr Gly Glu Glu Met Ser Asp Ile Tyr Val Lys Gly				
1209	1214	1219	1224	
tgg att cct ggc aat gaa gaa aac aaa cag aaa aca gat gtc cgt tac				4047
Trp Ile Pro Gly Asn Glu Glu Asn Lys Gln Lys Thr Asp Val Arg Tyr				
1225	1230	1235	1240	
aga tct ttg gat ggt gaa ggg aat ttt aac tgg cga ttt gtt ttc ccg				4095
Arg Ser Leu Asp Gly Glu Gly Asn Phe Asn Trp Arg Phe Val Phe Pro				
1241	1246	1251	1256	
ttt gac tac ctt cca gcc gaa caa ctc tgt atc gtt gcg aaa aaa gag				4143
Phe Asp Tyr Leu Pro Ala Glu Gln Leu Cys Ile Val Ala Lys Lys Glu				
1257	1262	1267	1272	
cat ttc tgg agt att gac caa acg gaa ttt cga atc cca ccc agg ctg				4191
His Phe Trp Ser Ile Asp Gln Thr Glu Phe Arg Ile Pro Pro Arg Leu				
1273	1278	1283	1288	
atc att cag ata tgg gac aat gac aag ttt tct ctg gat gac tac ttg				4239
Ile Ile Gln Ile Trp Asp Asn Asp Lys Phe Ser Leu Asp Asp Tyr Leu				
1289	1294	1299	1304	
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Gly Phe Leu Glu Leu Asp Leu Arg His Thr Ile Ile Pro Ala Lys Ser				
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cca gag aaa tgc aga ttg gac atg att ccg gac ctc aaa gcc atg aac				4335
Pro Glu Lys Cys Arg Leu Asp Met Ile Pro Asp Leu Lys Ala Met Asn				
1321	1326	1331	1336	





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Gln Ile Arg Lys Leu Arg Ser Arg Ser Leu Ser Gln Ile His Glu Ala	
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Glu Ile Glu Asp Trp Leu Asp Lys Leu Met Gln Leu Thr Glu Glu Pro	
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Glu Asn Gln Ala Leu Met Phe Gly Lys Trp Gly Thr Ser Gly Leu Val	
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Gly Arg His Lys Phe Ser Asp Val Thr Gly Lys Ile Lys Leu Lys Arg	
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Glu Phe Phe Leu Pro Pro Lys Gly Trp Glu Trp Glu Gly Glu Trp Ile	
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Val Asp Pro Glu Arg Ser Leu Leu Thr Glu Ala Asp Ala Gly His Thr	
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Glu Phe Thr Asp Glu Val Tyr Gln Asn Glu Ser Arg Tyr Pro Gly Gly	
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Ala Ala Ser Pro Ser Glu Leu Thr Cys Pro Pro Gly Trp Glu Trp Glu	
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Trp Glu Tyr Gly Ile Thr Ile Pro Pro Asp His Lys Pro Lys Ser Trp	
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Val Ala Ala Glu Lys Met Tyr His Thr His Arg Arg Arg Arg Leu Val	
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Arg Lys Arg Lys Lys Asp Leu Thr Gln Thr Ala Ser Ser Thr Ala Arg	
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Ala Met Glu Glu Leu Gln Asp Gln Glu Gly Trp Glu Tyr Ala Ser Leu	
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Ile Gly Trp Lys Phe His Trp Lys Gln Arg Ser Ser Asp Thr Phe Arg	
473 478 483 488	
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Ala Ala Ile Phe Lys Leu Glu Gly Ala Leu Gly Ala Asp Thr Thr Glu	
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Asp Gly Asp Glu Lys Ser Leu Glu Lys Gln Lys His Ser Ala Thr Thr	
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Tyr Ile Tyr His Leu Arg Cys Tyr Val Tyr Gln Ala Arg Asn Leu Leu	
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569 574 579 584	
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Thr Trp Asp Gln Thr Ile Ile Phe Asp Glu Val Glu Ile Tyr Gly Glu				
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Pro Gln Thr Val Leu Gln Asn Pro Pro Lys Val Ile Met Glu Leu Phe				
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Asp Asn Asp Gln Val Gly Lys Asp Glu Phe Leu Gly Arg Ser Ile Phe				
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Ser Pro Val Val Lys Leu Asn Ser Glu Met Asp Ile Thr Pro Lys Leu				
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Leu Trp His Pro Val Met Asn Gly Asp Lys Ala Cys Gly Asp Val Leu				
665	670	675	680	
gta act gca gag ctg att ctg agg ggc aag gat ggc tcc aac ctt ccc				2415
Val Thr Ala Glu Leu Ile Leu Arg Gly Lys Asp Gly Ser Asn Leu Pro				
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att ctt ccc cct caa agg gcg cca aat cta tac atg gtc ccc cag ggg				2463
Ile Leu Pro Pro Gln Arg Ala Pro Asn Leu Tyr Met Val Pro Gln Gly				
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745	750	755	760	
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Asn Leu Lys Lys Thr Pro Asn Phe Pro Ser Ser Val Leu Phe Met Lys				
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Val Phe Leu Pro Lys Glu Glu Leu Tyr Met Pro Pro Leu Val Ile Lys				
777	782	787	792	
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Val Ile Asp His Arg Gln Phe Gly Arg Lys Pro Val Val Gly Gln Cys				
793	798	803	808	
acc atc gag cgc ctg gat cgc ttt cgc tgt gac cct tat gca ggg aaa				2799
Thr Ile Glu Arg Leu Asp Arg Phe Arg Cys Asp Pro Tyr Ala Gly Lys				
809	814	819	824	

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Glu Asp Ile Val Pro Gln Leu Lys Ala Ser Leu Leu Ser Ala Pro Pro	
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Cys Arg Asp Ile Val Ile Glu Met Glu Asp Thr Lys Pro Leu Leu Ala	
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Ser Lys Leu Thr Glu Lys Glu Glu Glu Ile Val Asp Trp Trp Ser Lys	
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Lys Gly Tyr Ser Lys Leu Lys Ile Tyr Asn Cys Glu Leu Glu Asn Val	
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Gln Ile Arg Lys Leu Arg Ser Arg Ser Leu Ser Gln Ile His Glu Ala	
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Glu Asn Gln Ala Leu Met Phe Gly Lys Trp Gly Thr Ser Gly Leu Val	
281 286 291 296	
gga cgt cat aag ttt tct gat gtc aca gga aaa ata aaa ctc aag agg	1263
Gly Arg His Lys Phe Ser Asp Val Thr Gly Lys Ile Lys Leu Lys Arg	
297 302 307 312	
gaa ttt ttt ctg cct cca aaa ggc tgg gaa tgg gaa gga gag tgg ata	1311
Glu Phe Phe Leu Pro Pro Lys Gly Trp Glu Trp Glu Gly Glu Trp Ile	
313 318 323 328	
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Val	Asp	Pro	Glu	Arg	Ser	Leu	Leu	Thr	Glu	Ala	Asp	Ala	Gly	His	Thr		
329					334					339					344		
gag	ttc	act	gat	gaa	gtc	tat	cag	aac	gag	agc	cgc	tac	ccc	ggg	ggc	1407	
Glu	Phe	Thr	Asp	Glu	Val	Tyr	Gln	Asn	Glu	Ser	Arg	Tyr	Pro	Gly	Gly		
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gac	tgg	aag	ccg	gcc	gag	gac	acc	tac	acg	gat	gcg	aac	ggc	gat	aaa	1455	
Asp	Trp	Lys	Pro	Ala	Glu	Asp	Thr	Tyr	Thr	Asp	Ala	Asn	Gly	Asp	Lys		
361					366					371					376		
gca	gca	tca	ccc	agc	gag	ttg	act	tgt	cct	cca	ggt	tgg	gaa	tgg	gaa	1503	
Ala	Ala	Ser	Pro	Ser	Glu	Leu	Thr	Cys	Pro	Pro	Gly	Trp	Glu	Trp	Glu		
377					382					387					392		
gat	gat	gca	tgg	tct	tat	gac	ata	aat	cga	gcg	gtg	gat	gag	aaa	ggc	1551	
Asp	Asp	Ala	Trp	Ser	Tyr	Asp	Ile	Asn	Arg	Ala	Val	Asp	Glu	Lys	Gly		
393					398					403					408		
tgg	gaa	tat	gga	atc	acc	att	cct	cct	gat	cat	aag	ccc	aaa	tcc	tgg	1599	
Trp	Glu	Tyr	Gly	Ile	Thr	Ile	Pro	Pro	Asp	His	Lys	Pro	Lys	Ser	Trp		
409					414					419					424		
gtt	gca	gca	gag	aaa	atg	tac	cac	act	cat	aga	cgg	cga	agg	ctg	gtc	1647	
Val	Ala	Ala	Glu	Lys	Met	Tyr	His	Thr	His	Arg	Arg	Arg	Arg	Leu	Val		
425					430					435					440		
cga	aaa	cgc	aag	aaa	gat	tta	aca	cag	act	gct	tca	agc	acc	gca	agg	1695	
Arg	Lys	Arg	Lys	Lys	Asp	Leu	Thr	Gln	Thr	Ala	Ser	Ser	Thr	Ala	Arg		
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gcc	atg	gag	gaa	ttg	caa	gac	caa	gag	ggc	tgg	gaa	tat	gct	tct	cta	1743	
Ala	Met	Glu	Glu	Leu	Gln	Asp	Gln	Glu	Gly	Trp	Glu	Tyr	Ala	Ser	Leu		
457					462					467					472		
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Ile	Gly	Trp	Lys	Phe	His	Trp	Lys	Gln	Arg	Ser	Ser	Asp	Thr	Phe	Arg		
473					478					483					488		
cgc	aga	cgc	tgg	agg	aga	aaa	atg	gct	cct	tca	gaa	aca	cat	ggt	gca	1839	
Arg	Arg	Arg	Trp	Arg	Arg	Lys	Met	Ala	Pro	Ser	Glu	Thr	His	Gly	Ala		
489					494					499					504		
gct	gcc	atc	ttt	aaa	ctt	gaa	ggt	gcc	ctt	ggg	gca	gac	act	acc	gaa	1887	
Ala	Ala	Ile	Phe	Lys	Leu	Glu	Gly	Ala	Leu	Gly	Ala	Asp	Thr	Thr	Glu		
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521					526					531					536		
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Val	Phe	Gly	Ala	Asn	Thr	Pro	Ile	Val	Ser	Cys	Asn	Phe	Asp	Arg	Asp		
537					542					547					552		
tac	atc	tac	cat	ctg	cgc	tgc	tat	gtc	tat	caa	gcc	aga	aac	ctc	ttg	2031	
Tyr	Ile	Tyr	His	Leu	Arg	Cys	Tyr	Val	Tyr	Gln	Ala	Arg	Asn	Leu	Leu		

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Ala Leu Asp Lys Asp Ser Phe Ser Asp Pro Phe Ala His Ile Cys Phe				
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Leu His Arg Ser Lys Thr Thr Glu Ile Ile His Ser Thr Leu Asn Pro				
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Thr Trp Asp Gln Thr Ile Ile Phe Asp Glu Val Glu Ile Tyr Gly Glu				
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Pro Gln Thr Val Leu Gln Asn Pro Pro Lys Val Ile Met Glu Leu Phe				
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Asp Asn Asp Gln Val Gly Lys Asp Glu Phe Leu Gly Arg Ser Ile Phe				
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Ser Pro Val Val Lys Leu Asn Ser Glu Met Asp Ile Thr Pro Lys Leu				
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gta act gca gag ctg att ctg agg ggc aag gat ggc tcc aac ctt ccc				2415
Val Thr Ala Glu Leu Ile Leu Arg Gly Lys Asp Gly Ser Asn Leu Pro				
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Ile Leu Pro Pro Gln Arg Ala Pro Asn Leu Tyr Met Val Pro Gln Gly				
697	702	707	712	
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Ile Arg Pro Val Val Gln Leu Thr Ala Ile Glu Ile Leu Ala Trp Gly				
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Asn Leu Lys Lys Thr Pro Asn Phe Pro Ser Ser Val Leu Phe Met Lys				
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Val Phe Leu Pro Lys Glu Glu Leu Tyr Met Pro Pro Leu Val Ile Lys				
777	782	787	792	

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Val Ile Asp His Arg Gln Phe Gly Arg Lys Pro Val Val Gly Gln Cys	
793 798 803 808	
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Thr Ile Glu Arg Leu Asp Arg Phe Arg Cys Asp Pro Tyr Ala Gly Lys	
809 814 819 824	
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Glu Asp Ile Val Pro Gln Leu Lys Ala Ser Leu Leu Ser Ala Pro Pro	
825 830 835 840	
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Cys Arg Asp Ile Val Ile Glu Met Glu Asp Thr Lys Pro Leu Leu Ala	
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Pro Ala Thr Val His Leu Thr Glu Lys Glu Glu Glu Ile Val Asp Trp	
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Trp Ser Lys Phe Tyr Ala Ser Ser Gly Glu His Glu Lys Cys Gly Gln	
889 894 899 904	
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Tyr Ile Gln Lys Gly Tyr Ser Lys Leu Lys Ile Tyr Asn Cys Glu Leu	
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Glu Asn Val Ala Glu Phe Glu Gly Leu Thr Asp Phe Ser Asp Thr Phe	
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Lys Leu Tyr Arg Gly Lys Ser Asp Glu Asn Glu Asp Pro Ser Val Val	
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Gly Glu Phe Lys Gly Ser Phe Arg Ile Tyr Pro Leu Pro Asp Asp Pro	
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Ser Val Pro Ala Pro Pro Arg Gln Phe Arg Glu Leu Pro Asp Ser Val	
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Arg Leu Ala Leu His Ile Leu Arg Thr Gln Gly Leu Val Pro Glu His	
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Val Glu Thr Arg Thr Leu His Ser Thr Phe Gln Pro Asn Ile Ser Gln	
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Pro Gly Pro Pro Phe Asn Ile Thr Pro Arg Lys Ala Lys Arg Tyr Tyr	
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1225 1230 1235 1240	
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Ser Ile Thr Gly Glu Glu Met Ser Asp Ile Tyr Val Lys Gly Trp Ile	
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Pro Gly Asn Glu Glu Asn Lys Gln Lys Thr Asp Val Arg Tyr Arg Ser	
1257 1262 1267 1272	
ttg gat ggt gaa ggg aat ttt aac tgg cga ttt gtt ttc ccg ttt gac	4191
Leu Asp Gly Glu Gly Asn Phe Asn Trp Arg Phe Val Phe Pro Phe Asp	
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Tyr Leu Pro Ala Glu Gln Leu Cys Ile Val Ala Lys Lys Glu His Phe	
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Trp Ser Ile Asp Gln Thr Glu Phe Arg Ile Pro Pro Arg Leu Ile Ile	
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Gln Ile Trp Asp Asn Asp Lys Phe Ser Leu Asp Asp Tyr Leu Gly Phe	
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1337 1342 1347 1352	
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Lys Cys Arg Leu Asp Met Ile Pro Asp Leu Lys Ala Met Asn Pro Leu	
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1401 1406 1411 1416	
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Leu Pro Asn Arg Pro Glu Thr Ser Phe Leu Trp Phe Thr Asn Pro Cys	
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Lys Thr Met Lys Phe Ile Val Trp Arg Arg Phe Lys Trp Val Ile Ile	
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Tyr Ser Leu Pro Asn Tyr Leu Ser Met Lys Ile Val Lys Pro Asn Val				
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1497	

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	Met
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Gln Gly Lys Leu Thr Leu Leu Cys Asp Ala Lys Thr Asp Gly Ser Phe	
18 23 28 33	

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Leu Val His His Phe Leu Ser Phe Tyr Leu Lys Ala Asn Cys Lys Val	
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Cys Phe Val Ala Leu Ile Gln Ser Phe Ser His Tyr Ser Ile Val Gly	
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Gln Lys Leu Gly Val Ser Leu Thr Met Ala Arg Glu Arg Gly Gln Leu	
66 71 76 81	
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Val Phe Leu Glu Gly Leu Lys Ser Ala Val Asp Val Val Phe Gln Ala	
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Asn Leu Lys Pro Leu Phe Glu Phe Val Arg Glu Ala Leu Lys Pro Val	
114 119 124 129	
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Phe Ile His Tyr Cys Arg Ala Thr Val Cys Trp Glu Leu Lys Gly Asn	
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Met Val Val Leu Val His Asp Ser Gly Asp Ala Glu Asp Glu Glu Asn	
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Asp Ile Leu Leu Asn Gly Leu Ser His Gln Ser His Leu Ile Leu Arg	
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Ala Glu Gly Leu Ala Thr Gly Phe Cys Arg Asp Val His Gly Gln Leu	
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Arg Ile Leu Trp Arg Arg Pro Ser Gln Pro Ala Val His Arg Asp Gln	
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Ser Phe Thr Tyr Gln Tyr Lys Ile Gln Asp Lys Ser Val Ser Phe Phe	
242 247 252 257	
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Ala Lys Gly Met Ser Pro Ala Val Leu \*  
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 Ser Met Met Lys Ile Pro His Gln Thr Gln Lys Lys Arg Ser Leu Glu  
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 Pro Arg Phe Arg Cys Leu Phe Cys Leu Gln Phe Ala Ile Pro Ala Ser  
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 Arg Met Glu Gln Leu Asn Glu Leu Glu Leu Leu Met Glu Lys Ser Phe  
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 Trp Glu Glu Ala Glu Leu Pro Ala Glu Leu Phe Gln Lys Lys Val Val  
 77 82 87 92  
 gct tcc ttt cca aga aca gtt ctg agc aca gga atg gat aac cgg tac 336  
 Ala Ser Phe Pro Arg Thr Val Leu Ser Thr Gly Met Asp Asn Arg Tyr  
 93 98 103 108

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Leu Val Leu Ala Val Asn Thr Val Gln Asn Lys Glu Gly Asn Cys Glu	
109 114 119 124	
aag cgc ctg gtc atc act gct tca cag tca cta gaa aat aaa gaa cta	432
Lys Arg Leu Val Ile Thr Ala Ser Gln Ser Leu Glu Asn Lys Glu Leu	
125 130 135 140	
tgc atc ctt agg aat gac tgg tgt tct gtt cca gta gag cca gga gat	480
Cys Ile Leu Arg Asn Asp Trp Cys Ser Val Pro Val Glu Pro Gly Asp	
141 146 151 156	
atc att cat ttg gag gga gac tgc aca tct gac act tgg ata ata gat	528
Ile Ile His Leu Glu Gly Asp Cys Thr Ser Asp Thr Trp Ile Ile Asp	
157 162 167 172	
aaa gat ttt gga tat ttg att ctg tat cca gac atg ctg att tct ggc	576
Lys Asp Phe Gly Tyr Leu Ile Leu Tyr Pro Asp Met Leu Ile Ser Gly	
173 178 183 188	
acc agc ata gcc agt agt att cga tgt atg aga aga gct gtc ctg agt	624
Thr Ser Ile Ala Ser Ser Ile Arg Cys Met Arg Arg Ala Val Leu Ser	
189 194 199 204	
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Glu Thr Phe Arg Ser Ser Asp Pro Ala Thr Arg Gln Met Leu Ile Gly	
205 210 215 220	
acg gtt ctc cat gag gtg ttt caa aaa gcc ata aat aat agc ttt gcc	720
Thr Val Leu His Glu Val Phe Gln Lys Ala Ile Asn Asn Ser Phe Ala	
221 226 231 236	
cca gaa aag cta caa gaa ctt gct ttt caa aca att caa gaa ata aga	768
Pro Glu Lys Leu Gln Glu Leu Ala Phe Gln Thr Ile Gln Glu Ile Arg	
237 242 247 252	
cat ttg aag gaa atg tac cgc tta aat cta agt caa gat gaa ata aaa	816
His Leu Lys Glu Met Tyr Arg Leu Asn Leu Ser Gln Asp Glu Ile Lys	
253 258 263 268	
caa gaa gta gag gac tat ctt cct tcg ttt tgt aaa tgg gca gga gat	864
Gln Glu Val Glu Asp Tyr Leu Pro Ser Phe Cys Lys Trp Ala Gly Asp	
269 274 279 284	
ttc atg cat aaa aac act tcg act gac ttc cct cag atg cag ctc tct	912
Phe Met His Lys Asn Thr Ser Thr Asp Phe Pro Gln Met Gln Leu Ser	
285 290 295 300	
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Leu Pro Ser Asp Asn Ser Lys Asp Asn Ser Thr Cys Asn Ile Glu Val	
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ctc aag act ggt cag atg tac cct gtg cct gcc aac cat cta gat aaa Leu Lys Thr Gly Gln Met Tyr Pro Val Pro Ala Asn His Leu Asp Lys 397 402 407 412	1248
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Tyr	Leu	His	Asn	Phe	Gln	Cys	Lys	His	Gly	Ala	Ile	Pro	Val	Thr	Asn		
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Leu	Met	Ala	Gly	Asp	Arg	Val	Ile	Val	Ser	Gly	Glu	Glu	Arg	Ser	Leu		
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Phe	Ala	Leu	Ser	Arg	Gly	Tyr	Val	Lys	Glu	Ile	Asn	Met	Thr	Thr	Val		
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Thr	Cys	Leu	Leu	Asp	Arg	Asn	Leu	Ser	Val	Leu	Pro	Glu	Ser	Thr	Leu		
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Phe	Arg	Leu	Asp	Gln	Glu	Glu	Lys	Asn	Cys	Asp	Ile	Asp	Thr	Pro	Leu		
621					626					631					636		
gga	aat	ctt	tcc	aaa	ttg	atg	gaa	aac	acg	ttt	gtc	agc	aaa	aaa	ctt		1968
Gly	Asn	Leu	Ser	Lys	Leu	Met	Glu	Asn	Thr	Phe	Val	Ser	Lys	Lys	Leu		
637					642					647					652		
cga	gat	tta	att	att	gac	ttt	cgt	gaa	cct	cag	ttt	ata	tcc	tac	ctt		2016
Arg	Asp	Leu	Ile	Ile	Asp	Phe	Arg	Glu	Pro	Gln	Phe	Ile	Ser	Tyr	Leu		
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agt	tct	gtt	ctt	cca	cat	gat	gca	aag	gat	aca	gtt	gcc	tgc	att	cta		2064
Ser	Ser	Val	Leu	Pro	His	Asp	Ala	Lys	Asp	Thr	Val	Ala	Cys	Ile	Leu		
669					674					679					684		
aag	ggg	ttg	aat	aag	cct	cag	agg	caa	gcg	atg	aaa	aag	gta	ctt	ctt		2112
Lys	Gly	Leu	Asn	Lys	Pro	Gln	Arg	Gln	Ala	Met	Lys	Lys	Val	Leu	Leu		
685					690					695					700		
tca	aaa	gac	tac	aca	ctc	atc	gtg	ggg	atg	cct	ggg	aca	gga	aaa	aca		2160
Ser	Lys	Asp	Tyr	Thr	Leu	Ile	Val	Gly	Met	Pro	Gly	Thr	Gly	Lys	Thr		
701					706					711					716		
act	acg	ata	tgt	act	ctc	gta	aga	att	ctc	tac	gcc	tgt	ggg	ttt	agc		2208
Thr	Thr	Ile	Cys	Thr	Leu	Val	Arg	Ile	Leu	Tyr	Ala	Cys	Gly	Phe	Ser		
717					722					727					732		
gtt	ttg	ttg	acc	agc	tat	aca	cac	tct	gct	gtt	gac	aat	att	ctt	ttg		2256
Val	Leu	Leu	Thr	Ser	Tyr	Thr	His	Ser	Ala	Val	Asp	Asn	Ile	Leu	Leu		
733					738					743					748		
aag	tta	gcc	aag	ttt	aaa	ata	gga	ttt	ttg	cgt	ttg	ggg	cag	att	cag		2304
Lys	Leu	Ala	Lys	Phe	Lys	Ile	Gly	Phe	Leu	Arg	Leu	Gly	Gln	Ile	Gln		
749					754					759					764		
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Lys	Val	His	Pro	Ala	Ile	Gln	Gln	Phe	Thr	Glu	Gln	Glu	Ile	Cys	Arg		
765					770					775					780		
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Ser	Lys	Ser	Ile	Lys	Ser	Leu	Ala	Leu	Leu	Glu	Glu	Leu	Tyr	Asn	Ser		

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Gln Leu Ile Val Ala	Thr Thr Cys Met Gly	Ile Asn His Pro	Ile Phe	
797	802	807	812	
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Ser Arg Lys Ile Phe	Asp Phe Cys Ile Val	Asp Glu Ala Ser	Gln Ile	
813	818	823	828	
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Ser Gln Pro Ile Cys	Leu Gly Pro Leu Phe	Phe Ser Arg Arg	Phe Val	
829	834	839	844	
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Leu Val Gly Asp His	Gln Gln Leu Pro Pro	Leu Val Leu Asn	Arg Glu	
845	850	855	860	
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Ala Arg Ala Leu Gly	Met Ser Glu Ser Leu	Phe Lys Arg Leu	Glu Gln	
861	866	871	876	
aat aag agt gct gtt	gta cag tta acc gtg	cag tac aga atg	aac agt	2688
Asn Lys Ser Ala Val	Val Gln Leu Thr Val	Gln Tyr Arg Met	Asn Ser	
877	882	887	892	
aaa att atg tcc tta	agt aat aag ctg acc	tat gag ggc aag	ctg gag	2736
Lys Ile Met Ser Leu	Ser Asn Lys Leu Thr	Tyr Glu Gly Lys	Leu Glu	
893	898	903	908	
tgt gga tca gac aaa	gtg gcc aat gca gtg	ata aac cta cgt	cac ttt	2784
Cys Gly Ser Asp Lys	Val Ala Asn Ala Val	Ile Asn Leu Arg	His Phe	
909	914	919	924	
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Lys Asp Val Lys Leu	Glu Leu Glu Phe Tyr	Ala Asp Tyr Ser	Asp Asn	
925	930	935	940	
cct tgg ttg atg gga	gta ttt gaa ccc aac	aat cct gtt tgt	ttc ctt	2880
Pro Trp Leu Met Gly	Val Phe Glu Pro Asn	Asn Pro Val Cys	Phe Leu	
941	946	951	956	
aat aca gac aag gtt	cca gcg cca gaa caa	gtt gaa aaa ggt	ggt gtg	2928
Asn Thr Asp Lys Val	Pro Ala Pro Glu Gln	Val Glu Lys Gly	Gly Val	
957	962	967	972	
agc aat gta aca gaa	gcc aaa ctc ata gtt	ttc cta acc tcc	att ttt	2976
Ser Asn Val Thr Glu	Ala Lys Leu Ile Val	Phe Leu Thr Ser	Ile Phe	
973	978	983	988	
gtt aag gct gga tgc	agt ccc tct gat att	ggt att att gca	ccg tac	3024
Val Lys Ala Gly Cys	Ser Pro Ser Asp Ile	Gly Ile Ile Ala	Pro Tyr	
989	994	999	1004	
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Arg Gln Gln Leu Lys	Ile Ile Asn Asp Leu	Leu Ala Arg Ser	Ile Gly	
1005	1010	1015	1020	





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Asp Gly Asn Phe Leu Gln Ser Leu Pro Ala Glu Leu Glu Asn Met Lys  
10 15 20 25

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26 31 36 41

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Glu Val Leu Glu Lys Leu Thr Ala Val Asp Lys Leu Cys Met Ser Gly  
42 47 52 57

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Asn Cys Val Glu Thr Leu Arg Leu Gln Ala Leu Arg Lys Met Pro His  
58 63 68 73

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Ile Lys His Val Asp Leu Arg Leu Asn Val Ile Arg Lys Leu Ile Ala  
74 79 84 89

gat gaa gtg gac ttt cta cag cat gtt act cag ctt gac cta cga gac 339  
Asp Glu Val Asp Phe Leu Gln His Val Thr Gln Leu Asp Leu Arg Asp  
90 95 100 105

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Asn Lys Leu Gly Asp Leu Asp Ala Met Ile Phe Asn Asn Ile Glu Val  
106 111 116 121

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122 127 132 137

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Phe Leu Lys Ala Leu Tyr Ala Ser Ser Asn Glu Leu Val Gln Leu Asp  
138 143 148 153

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Val Leu Asp Ile Gly His Asn Gln Ile Cys Glu Leu Pro Ala Arg Leu	
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Phe Cys Asn Ser Ser Leu Arg Lys Leu Leu Ala Gly His Asn Gln Leu	
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282 287 292 297	
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Lys Leu Gln Glu Leu Asp Leu Thr Gly Asn Pro Arg Leu Val Leu Asp	
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His Lys Thr Leu Glu Leu Leu Asn Asn Ile Arg Cys Phe Lys Ile Asp	
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Glu Ala Val Glu Ala	Val Arg Asn Val Pro	Asp Ala Leu Ala Ala	Ala	
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Gly Ser Arg Val Glu	Val Glu Val Asp Ile	His Cys Ser Arg Ala	Lys	
826	831	836	841	

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 /

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Val Arg Leu His Glu Glu Gly Ile Ile Tyr Arg Ser Thr Arg Leu Val	
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Asn Trp Ser Cys Thr Leu Asn Ser Ala Ile Ser Asp Ile Glu Val Asp	
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Cys Glu Ile Arg Pro Trp Phe Thr Pro Arg Ser Ile Tyr Met Glu Ala	
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Leu Pro Ala Asn Thr Gln Ile Leu Leu Leu Gln Thr Asn Asn Ile Ala	
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Leu Ile Asn Leu Arg Ser Leu Val Ile Ala Gly Ile Asn Leu Thr Glu	

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Ile Pro Asp Asn Ala Leu Val Gly Leu Glu Asn Leu Glu Ser Ile Ser				
227	232	237	242	
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Phe Tyr Asp Asn Arg Leu Ile Lys Val Pro His Val Ala Leu Gln Lys				
243	248	253	258	
gtt gta aat ctc aaa ttt ttg gat cta aat aaa aat cct att aat aga				1053
Val Val Asn Leu Lys Phe Leu Asp Leu Asn Lys Asn Pro Ile Asn Arg				
259	264	269	274	
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Ser Tyr Ile His Pro Asn Ala Phe Phe Arg Leu Pro Lys Leu Glu Ser				
323	328	333	338	
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Leu Met Leu Asn Ser Asn Ala Leu Ser Ala Leu Tyr His Gly Thr Ile				
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387	392	397	402	
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Cys Leu Pro Leu Ile Ala Pro Glu Ser Phe Pro Ser Asn Leu Asn Val				
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Glu Ala Gly Ser Tyr Val Ser Phe His Cys Arg Ala Thr Ala Glu Pro				
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467 472 477 482	
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Ile Asn Gly Val Thr Pro Lys Glu Gly Gly Leu Tyr Thr Cys Ile Ala	
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Thr Asn Leu Val Gly Ala Asp Leu Lys Ser Val Met Ile Lys Val Asp	
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Ser His Ala Ala Gln Ser Ala Arg Ile Pro Ser Asp Val Lys Val Tyr	
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His Ser Tyr Val Arg Asn Tyr Leu Gln Lys Pro Thr Phe Ala Leu Gly	
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Glu Leu Tyr Pro Pro Leu Ile Asn Leu Trp Glu Ala Gly Lys Glu Lys	
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Ser Thr Ser Leu Lys Val Lys Ala Thr Val Ile Gly Leu Pro Thr Asn	
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Met Met Gly Gly Tyr Leu	
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gat gac agg ttc att cag ggc tgc gtg gtg cag act ccc tat gct ttc	343
Asp Asp Arg Phe Ile Gln Gly Ser Val Val Gln Thr Pro Tyr Ala Phe	
7 12 17 22	
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Tyr His Trp Gln Cys Ile Asp Val Phe Val Tyr Phe Ser His His Thr	
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Val Thr Ile Pro Pro Val Gly Trp Thr Asn Thr Ala His Arg His Gly	
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Val Cys Val Leu Gly Thr Phe Ile Thr Glu Trp Asn Glu Gly Gly Arg	
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Leu Cys Glu Ala Phe Leu Ala Gly Asp Glu Arg Ser Tyr Gln Ala Val	

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Ala Asp Arg Leu Val	Gln Ile Thr Gln Phe	Phe Arg Phe Asp Gly Trp		
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Leu Ile Asn Ile Glu	Asn Ser Leu Ser Leu	Ala Ala Val Gly Asn Met		
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Pro Pro Phe Leu Arg	Tyr Leu Thr Thr Gln	Leu His Arg Gln Val Pro		
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Lys Trp Gln Asp Glu	Leu Asn Gln His Asn	Arg Val Phe Phe Asp Ser		
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Cys Asp Gly Phe Phe	Thr Asn Tyr Asn Trp	Arg Glu Glu His Leu Glu		
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cgg atg ctg ggg cag	gct ggg gag cgc cgg	gct gat gtg tac gtg ggc		871
Arg Met Leu Gly Gln	Ala Gly Glu Arg Arg	Ala Asp Val Tyr Val Gly		
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gtg gat gtg ttt gct	cga ggg aac gtg gtc	gga ggc cga ttc gac aca		919
Val Asp Val Phe Ala	Arg Gly Asn Val Val	Gly Gly Arg Phe Asp Thr		
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gac aag gtg ggt ggt	ggc ttt cgt cca agg	gcc agc ggc cca gtg cct		967
Asp Lys Val Gly Gly	Gly Phe Arg Pro Arg	Ala Ser Gly Pro Val Pro		
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ccc ctg gga cct cat	ttc ctc atg gac ctt	cca ttc ccg tct gca cct		1015
Pro Leu Gly Pro His	Phe Leu Met Asp Leu	Pro Phe Pro Ser Ala Pro		
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Gln Arg Asn Asp Ser	Ser Cys Ser Ser Gln	Ser Gly Asp Pro Val Ala		
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Leu Arg Asn Arg Cys	Pro Ala Pro Ala Lys	Leu Cys Pro His *		
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1286

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 Lys Ser Leu Met Gln Lys Gly Gln Gln Met Leu Ala Arg Cys Pro Lys  
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 31 36 41 46  
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 Trp Glu Ser Val Glu Thr Lys Leu Asn Glu Arg/Lys Thr Lys Leu Glu  
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 gag gct ctc aac ttg gca atg gag ttc cac aat tct ctc caa gac ttc 540

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Ile	Asn	Trp	Leu	Thr	Gln	Ala	Glu	Gln	Thr	Leu	Asn	Val	Ala	Ser	Arg		
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cca	agt	ctc	atc	ttg	gac	aca	gtc	tta	ttt	caa	att	gac	gaa	cac	aag		636
Pro	Ser	Leu	Ile	Leu	Asp	Thr	Val	Leu	Phe	Gln	Ile	Asp	Glu	His	Lys		
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Asp	Lys	Thr	Gly	Thr	His	Leu	Lys	Tyr	Phe	Ser	Gln	Lys	Gln	Asp	Val		
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Val	Val	Gln	Arg	Leu	Val	Glu	Arg	Gly	Arg	Ser	Leu	Asp	Asp	Ala	Arg		
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Lys	Arg	Ala	Lys	Gln	Phe	His	Glu	Ala	Trp	Ser	Lys	Leu	Met	Glu	Trp		
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cta	gaa	gag	tca	gaa	aag	tct	ttg	gat	tct	gaa	ctg	gaa	atc	gca	aat		924
Leu	Glu	Glu	Ser	Glu	Lys	Ser	Leu	Asp	Ser	Glu	Leu	Glu	Ile	Ala	Asn		
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Lys	Ser	Leu	Gly	Ala	Lys	His	Ser	Val	Tyr	Asp	Thr	Thr	Asn	Arg	Thr		
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Arg Val Glu Pro Gln Leu Ala Glu Asp Gln Pro Val His Gly Asp Ile				
303	308	313	318	
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Asp Leu Val Met Asn Leu Ile Asp Asn His Lys Ala Phe Gln Lys Glu				
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Leu Gly Lys Arg Thr Ser Ser Val Gln Ala Leu Lys Arg Ser Ala Arg				
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Glu Leu Ile Glu Gly Ser Arg Asp Asp Ser Ser Trp Val Lys Val Gln				
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Met Gln Glu Leu Ser Thr Arg Trp Glu Thr Val Cys Ala Leu Ser Ile				
367	372	377	382	
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Ser Lys Gln Thr Arg Leu Glu Ala Ala Leu Arg Gln Ala Glu Glu Phe				
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His Ser Val Val His Ala Leu Leu Glu Trp Leu Ala Glu Ala Glu Gln				
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Thr Leu Arg Phe His Gly Val Leu Pro Asp Asp Glu Asp Ala Leu Arg				
415	420	425	430	
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Thr Leu Ile Asp Gln His Lys Glu Phe Met Lys Lys Leu Glu Glu Lys				
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Arg Ala Glu Leu Asn Lys Ala Thr Thr Met Gly Asp Thr Val Leu Ala				
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Ile Cys His Pro Asp Ser Ile Thr Thr Ile Lys His Trp Ile Thr Ile				
463	468	473	478	
atc cgg gcg agg ttt gag gag gtg ctg gcc tgg gca aag caa cat cag				1788
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479	484	489	494	
cag aga tta gca agt gct ctg gct ggg ctt att gcc aaa cag gaa ttg				1836
Gln Arg Leu Ala Ser Ala Leu Ala Gly Leu Ile Ala Lys Gln Glu Leu				
495	500	505	510	
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Leu Glu Ala Leu Leu Ala Trp Leu Gln Trp Ala Glu Thr Thr Leu Thr				
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Leu Ile Ala Glu His Gln Thr Phe Met Glu Glu Met Thr Arg Lys Gln	
543 548 553 558	
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Pro Ser Ser Leu Gln Ser His Ile Pro Val Leu Asp Lys Gly Arg Ala	
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Phe Asp Ile Trp Arg Lys Lys Tyr Met Arg Trp Met Asn His Lys Lys	
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Ser Arg Val Met Asp Phe Phe Arg Arg Ile Asp Lys Asp Gln Asp Gly	
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Lys Ile Thr Arg Gln Glu Phe Ile Asp Gly Ile Leu Ser Ser Lys Phe	
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Pro Thr Ser Arg Leu Glu Met Ser Ala Val Ala Asp Ile Phe Asp Arg	
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ctgtgaaggg g atg ttg gac aat cct aat gaa cct gtt agt gac ctc tct	170
Met Leu Asp Asn Pro Asn Glu Pro Val Ser Asp Leu Ser	
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Tyr Phe Asp Cys Ile Glu Ser Val Met Glu Ser Lys Val Leu Gly	
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62 67 72 77	
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Thr Ser Leu Leu Lys Thr Val Lys Ala Val Glu Asp Glu Ala Thr Arg				
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Ser Leu Ala Lys Val Cys Ala Asn Arg Thr Thr Ile Val Val Ala His	
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Arg Leu Ser Thr Val Val Asn Ala Asp Gln Ile Leu Val Ile Lys Asp	
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68 73 78 83

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Gln Gln Gln Val Val Gln Ala Val Glu Arg Ala Lys Gln Val Thr Met						
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Leu Ala Leu Ser Ser Ala Leu Gly Gly Gln Ser His Leu Pro Ile Lys	
171 176 181 186	
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Asp Glu Lys Lys His His Asp Asn Asp His Gln Arg Asp Arg Asp Ser	
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Ser Asn Val Glu Val Leu His Val Thr Lys Pro Asp Lys Tyr Gln Leu				
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His Leu His Glu Ser Cys Val Leu Ser Leu Lys Phe Ala His Cys Gly				
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Lys Trp Phe Val Ser Thr Gly Lys Asp Asn Leu Leu Asn Ala Trp Arg				
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763	768	773		
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 Met Ile Arg Asp Leu Ser Lys Met Tyr Pro  
 1 5  
 cag acc aga cac ccg gca ccg cat cag cct gct caa ccc ttt aaa ttt 158  
 Gln Thr Arg His Pro Ala Pro His Gln Pro Ala Gln Pro Phe Lys Phe  
 11 16 21 26  
 aca att tcc gaa tcc tgt gat cgg att aag gaa gag ttt cag ttt tta 206  
 Thr Ile Ser Glu Ser Cys Asp Arg Ile Lys Glu Glu Phe Gln Phe Leu  
 27 32 37 42  
 cag gct caa tac cac agt ctg aag ctg gaa tgt gag aaa ctc gcc agt 254  
 Gln Ala Gln Tyr His Ser Leu Lys Leu Glu Cys Glu Lys Leu Ala Ser  
 43 48 53 58  
 gag aag aca gag atg cag cgg cat tat gtc atg tat tat gaa atg tcc 302  
 Glu Lys Thr Glu Met Gln Arg His Tyr Val Met Tyr Tyr Glu Met Ser  
 59 64 69 74  
 tat ggg ttg aat ata gaa atg cac aag cag cac cag caa caa gtg gtg 350  
 Tyr Gly Leu Asn Ile Glu Met His Lys Gln His Gln Gln Gln Val Val  
 75 80 85 90  
 cag gct gtg gaa cgg gcc aag cag gtg acc atg gca gaa ctg aac gcc 398  
 Gln Ala Val Glu Arg Ala Lys Gln Val Thr Met Ala Glu Leu Asn Ala  
 91 96 101 106  
 atc att ggg cag caa caa ctc cag gcc cag cat tta tca cat gga cat 446  
 Ile Ile Gly Gln Gln Leu Gln Ala Gln His Leu Ser His Gly His  
 107 112 117 122

ggt ctc ccc gta cct ctg act cca cac cct tca ggg ctc cag ccc cct	494
Gly Leu Pro Val Pro Leu Thr Pro His Pro Ser Gly Leu Gln Pro Pro	
123 128 133 138	
gcc att cca ccc atc ggt agc agt gcc ggg ctt ctg gcc ctc tcc agt	542
Ala Ile Pro Pro Ile Gly Ser Ser Ala Gly Leu Leu Ala Leu Ser Ser	
139 144 149 154	
gct cta gga ggt cag tcc cat ctt cca att aaa gat gag aag aag cac	590
Ala Leu Gly Gly Gln Ser His Leu Pro Ile Lys Asp Glu Lys Lys His	
155 160 165 170	
cat gac aat gat cac caa aga gac aga gac tcc atc aag agc tct tca	638
His Asp Asn Asp His Gln Arg Asp Arg Asp Ser Ile <sup>3</sup> Lys Ser Ser Ser	
171 176 181 186	
gta tcc cca tca gcc agt ttc cga ggt gct gag aag cac aga aac tcc	686
Val Ser Pro Ser Ala Ser Phe Arg Gly Ala Glu Lys His Arg Asn Ser	
187 192 197 202	
gca gac tac tcc tca gag agc aaa aag cag aaa act gaa gaa aag gaa	734
Ala Asp Tyr Ser Ser Glu Ser Lys Lys Gln Lys Thr Glu Glu Lys Glu	
203 208 213 218	
att gca gct cgt tat gac agc gat ggt gag aaa agt gat gac aac ttg	782
Ile Ala Ala Arg Tyr Asp Ser Asp Gly Glu Lys Ser Asp Asp Asn Leu	
219 224 229 234	
gtg gtt gac gtt tcc aat gag gat cca tct tcc cct cga ggg agc cca	830
Val Val Asp Val Ser Asn Glu Asp Pro Ser Ser Pro Arg Gly Ser Pro	
235 240 245 250	
gca cat tcc ccc aga gag aat ggc cta gac aag aca cgc ctg ctc aag	878
Ala His Ser Pro Arg Glu Asn Gly Leu Asp Lys Thr Arg Leu Leu Lys	
251 256 261 266	
aaa gat gcc ccg att agt cca gcc tct att gca tct tcc agc agt act	926
Lys Asp Ala Pro Ile Ser Pro Ala Ser Ile Ala Ser Ser Ser Ser Thr	
267 272 277 282	
ccc tcc tcc aaa tcc aaa gaa ctt agc ctt aat gaa aaa tct act act	974
Pro Ser Ser Lys Ser Lys Glu Leu Ser Leu Asn Glu Lys Ser Thr Thr	
283 288 293 298	
ccc gtc tca aag tcc aat acc cct act cca cga act gat gcg ccc acc	1022
Pro Val Ser Lys Ser Asn Thr Pro Thr Pro Arg Thr Asp Ala Pro Thr	
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cca ggc agt aac tct act ccc gga ttg agg cct gta cct gga aaa cca	1070
Pro Gly Ser Asn Ser Thr Pro Gly Leu Arg Pro Val Pro Gly Lys Pro	
315 320 325 330	
cca gga gtt gac cct ttg gcc tca agc cta agg acc cca atg gca gta	1118
Pro Gly Val Asp Pro Leu Ala Ser Ser Leu Arg Thr Pro Met Ala Val	
331 336 341 346	
cct tgt cca tat cca act cca ttt ggg att gtg ccc cat gct gga atg	1166

Pro Cys Pro Tyr Pro Thr Pro Phe Gly Ile Val Pro His Ala Gly Met	
347 352 357 362	
aac gga gag ctg acc agc ccc gga gcg gcc tac gct ggg ctc cac aac	1214
Asn Gly Glu Leu Thr Ser Pro Gly Ala Ala Tyr Ala Gly Leu His Asn	
363 368 373 378	
atc tcc cct cag atg agc gca gct gct gcc gcc gcc gct gct gct gct	1262
Ile Ser Pro Gln Met Ser Ala Ala Ala Ala Ala Ala Ala Ala Ala Ala	
379 384 389 394	
gcc tat ggg aga tca cca gtg gtg gga ttt gat cca cac cat cac atg	1310
Ala Tyr Gly Arg Ser Pro Val Val Gly Phe Asp Pro His His His Met	
395 400 405 410	
cgt gtg cca gca ata cct cca aac ctg aca ggc att cca gga gga aaa	1358
Arg Val Pro Ala Ile Pro Pro Asn Leu Thr Gly Ile Pro Gly Gly Lys	
411 416 421 426	
cca gca tac tcc ttc cat gtt agc gca gat ggt cag atg cag cct gtc	1406
Pro Ala Tyr Ser Phe His Val Ser Ala Asp Gly Gln Met Gln Pro Val	
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Pro Phe Pro Pro Asp Ala Leu Ile Gly Pro Gly Ile Pro Arg His Ala	
443 448 453 458	
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Arg Gln Ile Asn Thr Leu Asn His Gly Glu Val Val Cys Ala Val Thr	
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Ile Ser Asn Pro Thr Arg His Val Tyr Thr Gly Gly Lys Gly Cys Val	
475 480 485 490	
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Lys Val Trp Asp Ile Ser His Pro Gly Asn Lys Ser Pro Val Ser Gln	
491 496 501 506	
ctc gac tgt ctg aac agg gat aac tac atc cgt tcc tgc aga ttg ctc	1646
Leu Asp Cys Leu Asn Arg Asp Asn Tyr Ile Arg Ser Cys Arg Leu Leu	
507 512 517 522	
cct gat ggt cgc acc cta att gtt gga ggg gaa gcc agt act ttg tcc	1694
Pro Asp Gly Arg Thr Leu Ile Val Gly Gly Glu Ala Ser Thr Leu Ser	
523 528 533 538	
att tgg gac ctg gcg gct cca acc cca cgc atc aag gca gag ctg aca	1742
Ile Trp Asp Leu Ala Ala Pro Thr Pro Arg Ile Lys Ala Glu Leu Thr	
539 544 549 554	
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Ser Ser Ala Pro Ala Cys Tyr Ala Leu Ala Ile Ser Pro Asp Ser Lys	
555 560 565 570	
gtc tgc ttc tca tgc tgc agc gac ggc aac atc gct gtg tgg gat ctg	1838
Val Cys Phe Ser Cys Cys Ser Asp Gly Asn Ile Ala Val Trp Asp Leu	

571	576	581	586	
cac aac cag acc ttg gtg agg caa ttc cag ggc cac aca gat gga gcc				1886
His Asn Gln Thr Leu Val Arg Gln Phe Gln Gly His Thr Asp Gly Ala				
587	592	597	602	
agc tgt att gac att tct aat gat ggc acc aag ctc tgg aca ggt ggt				1934
Ser Cys Ile Asp Ile Ser Asn Asp Gly Thr Lys Leu Trp Thr Gly Gly				
603	608	613	618	
ttg gac aac acg gtc agg tcc tgg gac ctg cgc gag ggg cgg cag ctg				1982
Leu Asp Asn Thr Val Arg Ser Trp Asp Leu Arg Glu Gly Arg Gln Leu				
619	624	629	634	
cag cag cac gac ttc acc tcc cag atc ttt tct ctg ggc tac tgc cca				2030
Gln Gln His Asp Phe Thr Ser Gln Ile Phe Ser Leu Gly Tyr Cys Pro				
635	640	645	650	
act gga gag tgg ctt gca gtg ggg atg gag aac agc aat gtg gaa gtt				2078
Thr Gly Glu Trp Leu Ala Val Gly Met Glu Asn Ser Asn Val Glu Val				
651	656	661	666	
ttg cat gtc acc aag cca gac aaa tac caa cta cat ctt cat gag agc				2126
Leu His Val Thr Lys Pro Asp Lys Tyr Gln Leu His Leu His Glu Ser				
667	672	677	682	
tgt gtg ctg tgc ctc aag ttt gcc cat tgt ggc aaa tgg ttt gta agc				2174
Cys Val Leu Ser Leu Lys Phe Ala His Cys Gly Lys Trp Phe Val Ser				
683	688	693	698	
act gga aag gac aac ctt ctg aat gcc tgg aga aca cct tat ggg gcc				2222
Thr Gly Lys Asp Asn Leu Leu Asn Ala Trp Arg Thr Pro Tyr Gly Ala				
699	704	709	714	
agt ata ttc cag tcc aaa gaa tcc tca tgc gtg ctt agc tgt gac atc				2270
Ser Ile Phe Gln Ser Lys Glu Ser Ser Ser Val Leu Ser Cys Asp Ile				
715	720	725	730	
tcc gtg gac gac aaa tac att gtc act ggc tct ggg gat aag aag gcc				2318
Ser Val Asp Asp Lys Tyr Ile Val Thr Gly Ser Gly Asp Lys Lys Ala				
731	736	741	746	
aca gtt tat gaa gtt att tat taa agacaaatct tcatgcagac tggacttctc				2372
Thr Val Tyr Glu Val Ile Tyr *				
747	752			
ctcctggtag cactttgctc tgtcatcctt tttgttcacc cccatccccg catctaaaac				2432
caaggatttc agatactcat tgcagttgtg gagtttaatc ccctttotta acctcacttc				2492
ccacttgcta ttgaattgtg aatagtcatt aaaaacctgt gataccaaat cttcagctgt				2552
ctacttgga gaacatggaa taagcatact taacagtga aagaatcttt aattatgtat				2612
tatatctgta atatatttat tttgtttaaa gaaggctttc taacaatgac tgactaaata				2672
aagctgtctg ctcctggcat tggataatgg aggggtgcggt tgtatttgga taccctncc				2732

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2787

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catgtccccg gggcccccggt gaggaggcgg cggcggct	233
atg gag atc gcg ccg	
Met Glu Ile Ala Pro	
1	
cag gag gcg ccg ccc gtg ccg ggc gcg gac ggc gac att gaa gag gcc	281
Gln Glu Ala Pro Pro Val Pro Gly Ala Asp Gly Asp Ile Glu Glu Ala	
6 11 16 21	
cca gct gag gcc ggg tct ccc agc ccc gcg tcg ccc ccc gcc gat ggg	329
Pro Ala Glu Ala Gly Ser Pro Ser Pro Ala Ser Pro Pro Ala Asp Gly	
22 27 32 37	
cgc ctc aag gct gca gcc aag cgc gtc aca ttc ccg tcc gac gag gat	377
Arg Leu Lys Ala Ala Ala Lys Arg Val Thr Phe Pro Ser Asp Glu Asp	
38 43 48 53	
atc gtg tct gga gca gtg gag ccc aaa gac ccc tgg aga cat gcc cag	425
Ile Val Ser Gly Ala Val Glu Pro Lys Asp Pro Trp Arg His Ala Gln	
54 59 64 69	
aat gtg acc gtg gac gag gtc atc ggc gcc tac aag cag gcc tgc cag	473
Asn Val Thr Val Asp Glu Val Ile Gly Ala Tyr Lys Gln Ala Cys Gln	
70 75 80 85	
aag ctg aac tgc agg cag atc ccc aag ctc ctc agg cag ctg cag gaa	521
Lys Leu Asn Cys Arg Gln Ile Pro Lys Leu Leu Arg Gln Leu Gln Glu	
86 91 96 101	
ttc aca gac ctc ggg cac cgc ctc gac tgt ctg gac ctg aaa ggt gag	569
Phe Thr Asp Leu Gly His Arg Leu Asp Cys Leu Asp Leu Lys Gly Glu	

102	107	112	117	
aag ctt gac tac aag acc tgt gag gcc ctg gaa gag gtc ttc aag agg				617
Lys Leu Asp Tyr Lys Thr Cys Glu Ala Leu Glu Glu Val Phe Lys Arg				
118	123	128	133	
ctg cag ttc aag gtc gtg gac ctg gag cag aca aac ctg gat gaa gat				665
Leu Gln Phe Lys Val Val Asp Leu Glu Gln Thr Asn Leu Asp Glu Asp				
134	139	144	149	
ggg gcc tcg gcc ctc ttc gac atg atc gag tac tac gag tcg gcc acc				713
Gly Ala Ser Ala Leu Phe Asp Met Ile Glu Tyr Tyr Glu Ser Ala Thr				
150	155	160	165	
cac ctc aac atc tcc ttc aac aag cac atc ggc acc cgg ggc tgg cag				761
His Leu Asn Ile Ser Phe Asn Lys His Ile Gly Thr Arg Gly Trp Gln				
166	171	176	181	
gcg gcc gcc cac atg atg cgc aag acg agc tgc ctg cag tat ctg gac				809
Ala Ala Ala His Met Met Arg Lys Thr Ser Cys Leu Gln Tyr Leu Asp				
182	187	192	197	
gcc cgc aac acg ccc ctg ctg gac cac tcg gcg ccc ttc gtg gcc cgt				857
Ala Arg Asn Thr Pro Leu Leu Asp His Ser Ala Pro Phe Val Ala Arg				
198	203	208	213	
gcc ctg cgc atc cgc agc agc ctg gca gtg ctg cac ttg gag aac gcc				905
Ala Leu Arg Ile Arg Ser Ser Leu Ala Val Leu His Leu Glu Asn Ala				
214	219	224	229	
agc ctg tcg ggg cgg ccc ctc atg ctg ctc gcc acg gcc ctg aag atg				953
Ser Leu Ser Gly Arg Pro Leu Met Leu Leu Ala Thr Ala Leu Lys Met				
230	235	240	245	
aac atg aac ctg cgg gag ctg tac ctg gcg gac aac aag ctc aac ggc				1001
Asn Met Asn Leu Arg Glu Leu Tyr Leu Ala Asp Asn Lys Leu Asn Gly				
246	251	256	261	
ctg cag gac tcg gcc cag ctg ggt aac ctg ctc aag ttc aac tgc tcc				1049
Leu Gln Asp Ser Ala Gln Leu Gly Asn Leu Leu Lys Phe Asn Cys Ser				
262	267	272	277	
ctg cag atc ctg gac ctc cgg aac aac cac gtg cta gac tcg ggt ctg				1097
Leu Gln Ile Leu Asp Leu Arg Asn Asn His Val Leu Asp Ser Gly Leu				
278	283	288	293	
gcc tac atc tgc gag ggc ctc aag gag cag agg aag ggg ctg gtg acc				1145
Ala Tyr Ile Cys Glu Gly Leu Lys Glu Gln Arg Lys Gly Leu Val Thr				
294	299	304	309	
ctg gtg ctg tgg aac aac cag ctc acg cac aca ggc atg gcc ttc ctg				1193
Leu Val Leu Trp Asn Asn Gln Leu Thr His Thr Gly Met Ala Phe Leu				
310	315	320	325	
ggc atg aca ctg agc ctg gag acg ctg aac ctg ggc cac aac ccc atc				1241
Gly Met Thr Leu Ser Leu Glu Thr Leu Asn Leu Gly His Asn Pro Ile				
326	331	336	341	



ccg ccc ccg ggg cct gag gtc aag ggg ggc agc tgc ggc ctg gag cac	1961
Pro Pro Pro Gly Pro Glu Val Lys Gly Gly Ser Cys Gly Leu Glu His	
566 571 576 581	
gaa ctg agc tgc tcc aag aac gag aag gag ctc gag gag ctg ctt ctg	2009
Glu Leu Ser Cys Ser Lys Asn Glu Lys Glu Leu Glu Glu Leu Leu Leu	
582 587 592 597	
gaa gcc agt cag gaa tcc ggg cag gag aca ctg tga cact ttagttccct	2059
Glu Ala Ser Gln Glu Ser Gly Gln Glu Thr Leu *	
598 603 608	
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ccagccttcc tgaggcccag gatgccaggg gtggggggcca ttctgggggc cccctcccc	2179
cacagcaaca ctacaagggg tgcaggagct acagggagtg gccctccgcg cgtgactcaa	2239
gcacttctat ttatgagccc agcactggaa gactctgggg gtgaatggga ggagggggag	2299
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agaacagccc cagacagcgc aggccgggca ggggtggggg atgggagcag aggatcagag	2539
ctttcttttt ctcaagtgca ataaatctat caggagctg gggcgggagc agccggcact	2599
ccgggaccct gctgtccagg ccaactggagg ctgcgcctg agaggcacta cagcccttg	2659
ggggcgagtg gcatgggtgt gggtgagggt gggcagaggg ctggggctac tcctgtcgt	2719
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tacctatctc ggcataattc ttcataaaaa cacaggtgct ctccctgccg atcctgtcca	180



actgatctct caaaccacca cccctttctac aaaacaacaa ctcctttcct tcttgggc 238  
 atg gtt gga tac ttt tac ctt tgg ata cct ggt ttt gcc atc cta aca 286  
 Met Val Gly Tyr Phe Tyr Leu Trp Ile Pro Gly Phe Ala Ile Leu Thr  
 1 5 10 15

aaa cca tta tgt aaa ctc aca aaa gaa aac cta gct gat gcc ata gat 334  
 Lys Pro Leu Cys Lys Leu Thr Lys Glu Asn Leu Ala Asp Ala Ile Asp 32  
 17 22 27

cct aaa tcc ttt tcc cac tcc tct ttc cgt tcc ttg aag aca gca tta 382  
 Pro Lys Ser Phe Ser His Ser Ser Phe Arg Ser Leu Lys Thr Ala Leu 48  
 33 38 43

gag aat gct tcc aca cta gct ctc cct gac tca tcc caa ccc ttt ttc 430  
 Glu Asn Ala Ser Thr Leu Ala Leu Pro Asp Ser Ser Gln Pro Phe Phe 64  
 49 54 59

att aca cac agc cga agt gca ggg ctg tgt ggt cga aat tct tac aca 478  
 Ile Thr His Ser Arg Ser Ala Gly Leu Cys Gly Arg Asn Ser Tyr Thr 80  
 65 70 75

agg act ggg acc gct ccc tgt ggc ctt ttt atc caa aca act tga gct 526  
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 Met Asp Ser Val  
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gag aag ggg gcc gcc acc tcc gtc tcc aac ccg cgg ggg cga ccg tcc 164  
 Glu Lys Gly Ala Ala Thr Ser Val Ser Asn Pro Arg Gly Arg Pro Ser 20  
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cgg ggc cgg ccg ccg aag ctg cag cgc aac tot cgc ggc ggc cag ggc 212  
 Arg Gly Arg Pro Pro Lys Leu Gln Arg Asn Ser Arg Gly Gly Gln Gly 36  
 21 26 31

cga ggt gtg gag aag ccc ccg cac ctg gca gcc cta att ctg gcc cgg 260  
 Arg Gly Val Glu Lys Pro Pro His Leu Ala Ala Leu Ile Leu Ala Arg 52  
 37 42 47

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Gly Gly Ser Lys Gly Ile Pro Leu Lys Asn Ile Lys His Leu Ala Gly	
53 58 63 68	
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Val Pro Leu Ile Gly Trp Val Leu Arg Ala Ala Leu Asp Ser Gly Ala	
69 74 79 84	
ttc cag agt gta tgg gtt tcg aca gac cat gat gaa att gag aat gtg	404
Phe Gln Ser Val Trp Val Ser Thr Asp His Asp Glu Ile Glu Asn Val	
85 90 95 100	
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Ala Lys Gln Phe Gly Ala Gln Val His Arg Arg Ser Ser Glu Val Ser	
101 106 111 116	
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Lys Asp Ser Ser Thr Ser Leu Asp Ala Ile Ile Glu Phe Leu Asn Tyr	
117 122 127 132	
cat aat gag gtt gac att gta gga aat att caa gct act tct cca tgt	548
His Asn Glu Val Asp Ile Val Gly Asn Ile Gln Ala Thr Ser Pro Cys	
133 138 143 148	
tta cat cct act gat ctt caa aaa gtt gca gaa atg att cga gaa gaa	596
Leu His Pro Thr Asp Leu Gln Lys Val Ala Glu Met Ile Arg Glu Glu	
149 154 159 164	
gga tat gat tct gtt ttc tct gtt gtg aga cgc cat cag ttt cga tgg	644
Gly Tyr Asp Ser Val Phe Ser Val Val Arg Arg His Gln Phe Arg Trp	
165 170 175 180	
agt gaa att cag aaa gga gtt cgt gaa gtg acc gaa cct ctg aat tta	692
Ser Glu Ile Gln Lys Gly Val Arg Glu Val Thr Glu Pro Leu Asn Leu	
181 186 191 196	
aat cca gct aaa cgg cct cgt cga caa gac tgg gat gga gaa tta tat	740
Asn Pro Ala Lys Arg Pro Arg Arg Gln Asp Trp Asp Gly Glu Leu Tyr	
197 202 207 212	
gaa aat ggc tca ttt tat ttt gct aaa aga cat ttg ata gag atg ggt	788
Glu Asn Gly Ser Phe Tyr Phe Ala Lys Arg His Leu Ile Glu Met Gly	
213 218 223 228	
tac ttg cag ggt gga aaa atg gca tac tac gaa atg cga gct gaa cat	836
Tyr Leu Gln Gly Gly Lys Met Ala Tyr Tyr Glu Met Arg Ala Glu His	
229 234 239 244	
agt gtg gat ata gat gtg gat att gat tgg cct att gca gag caa aga	884
Ser Val Asp Ile Asp Val Asp Ile Asp Trp Pro Ile Ala Glu Gln Arg	
245 250 255 260	
gta tta aga tat ggc tat ttt ggc aaa gag aag ctt aag gaa ata aaa	932
Val Leu Arg Tyr Gly Tyr Phe Gly Lys Glu Lys Leu Lys Glu Ile Lys	
261 266 271 276	

ctt ttg gtt tgc aat att gat gga tgt ctc acc aat ggc cac att tat	980
Leu Leu Val Cys Asn Ile Asp Gly Cys Leu Thr Asn Gly His Ile Tyr	
277 282 287 292	
gta tca gga gac caa aaa gaa ata ata tct tat gat gta aaa gat gct	1028
Val Ser Gly Asp Gln Lys Glu Ile Ile Ser Tyr Asp Val Lys Asp Ala	
293 298 303 308	
att ggg ata agt tta tta aag aaa agt ggt att gag gtg agg cta atc	1076
Ile Gly Ile Ser Leu Leu Lys Lys Ser Gly Ile Glu Val Arg Leu Ile	
309 314 319 324	
tca gaa agg gcc tgt tca aag cag acg ctg tct tct tta aaa ctg gat	1124
Ser Glu Arg Ala Cys Ser Lys Gln Thr Leu Ser Ser Leu Lys Leu Asp	
325 330 335 340	
tgc aaa atg gaa gtc agt gta tca gac aag cta gca gtt gta gat gaa	1172
Cys Lys Met Glu Val Ser Val Ser Asp Lys Leu Ala Val Val Asp Glu	
341 346 351 356	
tgg aga aaa gaa atg ggc ctg tgc tgg aaa gaa gtg gca tat ctt gga	1220
Trp Arg Lys Glu Met Gly Leu Cys Trp Lys Glu Val Ala Tyr Leu Gly	
357 362 367 372	
aat gaa gtg tct gat gaa gag tgc ttg aag aga gtg ggc cta agt ggc	1268
Asn Glu Val Ser Asp Glu Glu Cys Leu Lys Arg Val Gly Leu Ser Gly	
373 378 383 388	
gct cct gct gat gcc tgt tct act gcc cag aag gct gtt gga tac att	1316
Ala Pro Ala Asp Ala Cys Ser Thr Ala Gln Lys Ala Val Gly Tyr Ile	
389 394 399 404	
tgc aaa tgt aat ggt ggc cgt ggt gcc atc cga gaa ttt gca gag cac	1364
Cys Lys Cys Asn Gly Gly Arg Gly Ala Ile Arg Glu Phe Ala Glu His	
405 410 415 420	
att tgc cta cta atg gaa aag gtt aat aat tca tgc caa aaa tag aaa	1412
Ile Cys Leu Leu Met Glu Lys Val Asn Asn Ser Cys Gln Lys *	
421 426 431	
ttagcgtaat attgagaaaa aatgataca gccttcttca gccagtttgc ttttattttt	1472
gattaagtaa attccatggt gtaatgttac agagagtgtg atttggtttg tgatatatat	1532
atattgtgct ctacttttct ctttacgcaa gataattatt tagagactga ttacagtctt	1592
tctcagatgtt ttagtaaatg caagtaagaa catcatcaaa gttcactttg tattgtaccc	1652
tgtaaaactg tgtgtttgtg tgctttcaaa gatgttgga ttttatttat ctggggacag	1712
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<213> Homo sapiens

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<400> 361

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Leu Ser Arg Ile Arg Ile Arg Gly Arg Val Asp Ala Gly Asn Trp Arg		
12 17 22 27		
gtg gga ctc cag aca gga gag gct gcg cct tcc ccg cac cgg gac ctt		146
Val Gly Leu Gln Thr Gly Glu Ala Ala Pro Ser Pro His Arg Asp Leu		
28 33 38 43		
cgc gac aca cca gat cct cgc ccc tgg ctc gcg cga acg cac agg atg		194
Arg Asp Thr Pro Asp Pro Arg Pro Trp Leu Ala Arg Thr His Arg Met		
44 49 54 59		
acc acc acc ctc gtg tct gcc acc atc ttc gac ttg agc gaa gtt tta		242
Thr Thr Thr Leu Val Ser Ala Thr Ile Phe Asp Leu Ser Glu Val Leu		
60 65 70 75		
tgc aag ggt aac aag atg ctc aac tat agt gct ccc agt gca ggg ggt		290
Cys Lys Gly Asn Lys Met Leu Asn Tyr Ser Ala Pro Ser Ala Gly Gly		
76 81 86 91		
tgc ctg ctg gac aga aag gca gtg ggc acc cct gct ggt ggg ggc ttc		338
Cys Leu Leu Asp Arg Lys Ala Val Gly Thr Pro Ala Gly Gly Gly Phe		
92 97 102 107		
cct cgg agg cac tca gtc acc ctg ccc agc tcc aag ttc cac cag aac		386
Pro Arg Arg His Ser Val Thr Leu Pro Ser Ser Lys Phe His Gln Asn		
108 113 118 123		
cag ctc ctc agc agc ctc aag ggt gag cca gcc ccc gct ctg agc tcg		434
Gln Leu Leu Ser Ser Leu Lys Gly Glu Pro Ala Pro Ala Leu Ser Ser		
124 129 134 139		
cga gac agc cgc ttc cga gac cgc tcc ttc tcg gaa ggg ggc gag cgg		482
Arg Asp Ser Arg Phe Arg Asp Arg Ser Phe Ser Glu Gly Gly Glu Arg		
140 145 150 155		
ctg ctg ccc acc cag aag cag ccc ggg ggc ggc cag gtc aac tcc agc		530
Leu Leu Pro Thr Gln Lys Gln Pro Gly Gly Gly Gln Val Asn Ser Ser		
156 161 166 171		
cgc tac aag acg gag ctg tgc cgc ccc ttt gag gaa aac ggt gcc tgt		578
Arg Tyr Lys Thr Glu Leu Cys Arg Pro Phe Glu Glu Asn Gly Ala Cys		
172 177 182 187		
aag tac ggg gac aag tgc cag ttc gca cac ggc atc cac gag ctc cgc		626

Lys	Tyr	Gly	Asp	Lys	Cys	Gln	Phe	Ala	His	Gly	Ile	His	Glu	Leu	Arg		
188					193					198					203		
agc	ctg	acc	cgc	cac	ccc	aag	tac	aag	acg	gag	ctg	tgc	cgc	acc	ttc	674	
Ser	Leu	Thr	Arg	His	Pro	Lys	Tyr	Lys	Thr	Glu	Leu	Cys	Arg	Thr	Phe		
204					209					214					219		
cac	acc	atc	ggc	ttt	tgc	ccc	tac	ggg	ccc	cgc	tgc	cac	ttc	atc	cac	722	
His	Thr	Ile	Gly	Phe	Cys	Pro	Tyr	Gly	Pro	Arg	Cys	His	Phe	Ile	His		
220					225					230					235		
aac	gct	gaa	gag	cgc	cgt	gcc	ctg	gcc	ggg	gcc	cgg	gac	ctc	tcc	gct	770	
Asn	Ala	Glu	Glu	Arg	Arg	Ala	Leu	Ala	Gly	Ala	Arg	Asp	Leu	Ser	Ala		
236					241					246					251		
gac	cgt	ccc	cgc	ctc	cag	cat	agc	ttt	agc	ttt	gct	ggg	ttt	ccc	agt	818	
Asp	Arg	Pro	Arg	Leu	Gln	His	Ser	Phe	Ser	Phe	Ala	Gly	Phe	Pro	Ser		
252					257					262					267		
gcc	gct	gcc	acc	gcc	gct	gcc	acc	ggg	ctg	ctg	gac	agc	ccc	acg	tcc	866	
Ala	Ala	Ala	Thr	Ala	Ala	Ala	Thr	Gly	Leu	Leu	Asp	Ser	Pro	Thr	Ser		
268					273					278					283		
atc	acc	cca	ccc	cct	att	ctg	agc	gcc	gat	gac	ctc	ctg	ggc	tca	cct	914	
Ile	Thr	Pro	Pro	Pro	Ile	Leu	Ser	Ala	Asp	Asp	Leu	Leu	Gly	Ser	Pro		
284					289					294					299		
acc	ctg	ccc	gat	ggc	acc	aat	aac	cct	ttt	gcc	ttc	tcc	agc	cag	gag	962	
Thr	Leu	Pro	Asp	Gly	Thr	Asn	Asn	Pro	Phe	Ala	Phe	Ser	Ser	Gln	Glu		
300					305					310					315		
ctg	gca	agc	ctc	ttt	gcc	cct	agc	atg	ggg	ctg	ccc	ggg	ggt	ggc	tcc	1010	
Leu	Ala	Ser	Leu	Phe	Ala	Pro	Ser	Met	Gly	Leu	Pro	Gly	Gly	Gly	Ser		
316					321					326					331		
ccg	acc	acc	ttc	ctc	ttc	cgg	ccc	atg	tcc	gag	tcc	cct	cac	atg	ttt	1058	
Pro	Thr	Thr	Phe	Leu	Phe	Arg	Pro	Met	Ser	Glu	Ser	Pro	His	Met	Phe		
332					337					342					347		
gac	tct	ccc	ccc	agc	cct	cag	gat	tct	ctc	tgc	gac	cag	gag	ggc	tac	1106	
Asp	Ser	Pro	Pro	Ser	Pro	Gln	Asp	Ser	Leu	Ser	Asp	Gln	Glu	Gly	Tyr		
348					353					358					363		
ctg	agc	agc	tcc	agc	agc	agc	cac	agt	ggc	tca	gac	tcc	ccg	acc	ttg	1154	
Leu	Ser	Ser	Ser	Ser	Ser	Ser	His	Ser	Gly	Ser	Asp	Ser	Pro	Thr	Leu		
364					369					374					379		
gac	aac	tca	aga	cgc	ctg	ccc	atc	ttc	agc	aga	ctt	tcc	atc	tca	gat	1202	
Asp	Asn	Ser	Arg	Arg	Leu	Pro	Ile	Phe	Ser	Arg	Leu	Ser	Ile	Ser	Asp		
380					385					390					395		
gac	taa	gccagggtag	ggagggacct	cctgggtcgac	gcgggccgcga	attcgggatcc										1258	
Asp	*																
396																	
tcgagagatc	totTTTTTTTTg	ggTTTTggtgg	ggtatcttca	tcacogaata	gatagccaac											1318	

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Pro Ile Gln Lys Ala Val Ile Asn His Thr Phe Gly Val Pro Leu Pro  
3 8 13 18

cac cga aga aag caa atc ata tca tgc aac att tgc cag ttg aga ttt 151  
His Arg Arg Lys Gln Ile Ile Ser Cys Asn Ile Cys Gln Leu Arg Phe  
19 24 29 34

aat tct gat agc cag gct gcg gcc cac tac aaa ggc acg aaa cat gcc 199  
Asn Ser Asp Ser Gln Ala Ala Ala His Tyr Lys Gly Thr Lys His Ala  
35 40 45 50

aag aag ctc aaa gca ctg gaa gcc atg aaa aat aag cag aaa tct gta 247  
Lys Lys Leu Lys Ala Leu Glu Ala Met Lys Asn Lys Gln Lys Ser Val  
51 56 61 66

act gcc aag gac agc gca aag act acc ttc acc tcc atc act acc aat 295  
Thr Ala Lys Asp Ser Ala Lys Thr Thr Phe Thr Ser Ile Thr Thr Asn  
67 72 77 82

acc atc aat acc agc tct gac aaa aca gac ggt act gca ggg aca cca 343  
Thr Ile Asn Thr Ser Ser Asp Lys Thr Asp Gly Thr Ala Gly Thr Pro  
83 88 93 98

gca ata tca acg acg aca act gtg gaa atc cgc aaa agc agt gtt atg 391  
Ala Ile Ser Thr Thr Thr Thr Val Glu Ile Arg Lys Ser Ser Val Met  
99 104 109 114

aca act gag atc acc tct aaa gtg gaa aaa agc cca acg aca gcc act 439  
Thr Thr Glu Ile Thr Ser Lys Val Glu Lys Ser Pro Thr Thr Ala Thr  
115 120 125 130

ggc aat agc tca tgt cct tct act gag acc gag gaa gaa aag gca aaa 487  
Gly Asn Ser Ser Cys Pro Ser Thr Glu Thr Glu Glu Glu Lys Ala Lys  
131 136 141 146

cgg ctt ctt tac tgt tgg cta tgc aag gtt gct gtc aac tct gcc tcg	535
Arg Leu Leu Tyr Cys Ser Leu Cys Lys Val Ala Val Asn Ser Ala Ser	
147 152 157 162	
cag ctg gag gcg cac aac agt ggt act aag cac aaa acc atg tta gaa	583
Gln Leu Glu Ala His Asn Ser Gly Thr Lys His Lys Thr Met Leu Glu	
163 168 173 178	
gcc cgg aat gga agt ggc act atc aaa gcc ttt cct agg gca gga gtg	631
Ala Arg Asn Gly Ser Gly Thr Ile Lys Ala Phe Pro Arg Ala Gly Val	
179 184 189 194	
aaa ggc aaa gga cct gtt aat aaa gga aac aca ggc ctc caa aat aaa	679
Lys Gly Lys Gly Pro Val Asn Lys Gly Asn Thr Gly Leu Gln Asn Lys	
195 200 205 210	
aca ttt cac tgt gaa atc tgt gat gtg cac gtc aac tcg gaa acg caa	727
Thr Phe His Cys Glu Ile Cys Asp Val His Val Asn Ser Glu Thr Gln	
211 216 221 226	
ctt aaa cag cac att agc agt aga agg cac aaa gac aga gct gct ggg	775
Leu Lys Gln His Ile Ser Ser Arg Arg His Lys Asp Arg Ala Ala Gly	
227 232 237 242	
aag ccc ccg aaa cct aaa tac agt cct tac aac aaa cta cag aag aca	823
Lys Pro Pro Lys Pro Lys Tyr Ser Pro Tyr Asn Lys Leu Gln Lys Thr	
243 248 253 258	
gca cat cca ctg ggg gta aaa tta gta ttt tca aaa gaa cct tca aag	871
Ala His Pro Leu Gly Val Lys Leu Val Phe Ser Lys Glu Pro Ser Lys	
259 264 269 274	
cca ttg gct cca cga att cta cca aat cct cta gca gct gca gca gcc	919
Pro Leu Ala Pro Arg Ile Leu Pro Asn Pro Leu Ala Ala Ala Ala Ala	
275 280 285 290	
gca gca gca gtg gca gtg agt tcc ccc ttc agt ctt cga act gct cca	967
Ala Ala Ala Val Ala Val Ser Ser Pro Phe Ser Leu Arg Thr Ala Pro	
291 296 301 306	
gca gca aca ctg ttc cag act tct gcg ctt cct ccg gca ctc ctg cgg	1015
Ala Ala Thr Leu Phe Gln Thr Ser Ala Leu Pro Pro Ala Leu Leu Arg	
307 312 317 322	
cca gct ccc gga ccc att cgg acc gcc cac act cct gtg ctg ttt gct	1063
Pro Ala Pro Gly Pro Ile Arg Thr Ala His Thr Pro Val Leu Phe Ala	
323 328 333 338	
cct tac taa attccaa ataggagtaa ttgtactgca ataatttttc aaaaaacaaa	1119
Pro Tyr *	
339	
aaacaaaaca aacaaaagag aactatgcag tgtttattta tagtttaaag tataatctgaa	1179
gagccaggac ttttgatagt gaattgaaaa gggtataaaaa aagtggggga gggttggggg	1239
tgggagggag ggagtggtat tttctccaca ttaaagcatt cctottgaac gttgattgtt	1299

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                   Met Arg Ser Ala Lys Ser Ala Ser Ser Ser Glu Glu Leu  
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 atc aac aaa ctt aac ttt ttg gat gaa gca gaa aag gac ttg gcc acc 158  
 Ile Asn Lys Leu Asn Phe Leu Asp Glu Ala Glu Lys Asp Leu Ala Thr  
   14                  19                  24                  29  
 gtg aat tca aat cca ttt gat gat cct gat gct gca gaa tta aat cca 206  
 Val Asn Ser Asn Pro Phe Asp Asp Pro Asp Ala Ala Glu Leu Asn Pro  
   30                  35                  40                  45  
 ttt gga gat cct gac tca gaa gaa cct atc act gaa aca gct tca cct 254  
 Phe Gly Asp Pro Asp Ser Glu Glu Pro Ile Thr Glu Thr Ala Ser Pro  
   46                  51                  56                  61  
 aga aaa aca gaa gac tct ttt tat aat aac agc tat aat ccc ttt aaa 302  
 Arg Lys Thr Glu Asp Ser Phe Tyr Asn Asn Ser Tyr Asn Pro Phe Lys  
   62                  67                  72                  77  
 gag gtg cag act cca cag tat ttg aac cca ttc gat gag cca gaa gca 350  
 Glu Val Gln Thr Pro Gln Tyr Leu Asn Pro Phe Asp Glu Pro Glu Ala  
   78                  83                  88                  93  
 ttt gtg acc ata aag gat tct cct ccc cag tct aca aaa aga aaa aat 398  
 Phe Val Thr Ile Lys Asp Ser Pro Pro Gln Ser Thr Lys Arg Lys Asn  
   94                  99                  104                  109  
 ata aga cct gtg gat atg agc aag tac ctc tat gct gat agt tct aaa 446  
 Ile Arg Pro Val Asp Met Ser Lys Tyr Leu Tyr Ala Asp Ser Ser Lys  
  110                  115                  120                  125  
 act gaa gaa gaa gaa gaa ttg gat gaa tca aat cct ttt tat gaa cct aaa 494



Thr	Glu	Glu	Glu	Glu	Leu	Asp	Glu	Ser	Asn	Pro	Phe	Tyr	Glu	Pro	Lys	
126					131					136					141	
tca	act	cct	cct	cca	aat	aat	ttg	gta	aat	cct	gtt	caa	gaa	cta	gaa	542
Ser	Thr	Pro	Pro	Pro	Asn	Asn	Leu	Val	Asn	Pro	Val	Gln	Glu	Leu	Glu	
142					147					152					157	
act	gaa	agg	cga	gtg	aaa	aga	aag	gcc	ccg	gct	cca	cca	gtc	ctc	tca	590
Thr	Glu	Arg	Arg	Val	Lys	Arg	Lys	Ala	Pro	Ala	Pro	Pro	Val	Leu	Ser	
158					163					168					173	
cca	aaa	aca	gga	gta	tta	aat	gaa	aac	aca	gtt	tct	gca	gga	aaa	gat	638
Pro	Lys	Thr	Gly	Val	Leu	Asn	Glu	Asn	Thr	Val	Ser	Ala	Gly	Lys	Asp	
174					179					184					189	
ctc	tct	act	tct	cct	aag	cca	agc	cct	ata	cca	agt	cct	gtt	ttg	ggg	686
Leu	Ser	Thr	Ser	Pro	Lys	Pro	Ser	Pro	Ile	Pro	Ser	Pro	Val	Leu	Gly	
190					195					200					205	
cga	aag	cca	aat	gct	agt	cag	tct	ttg	ctt	gta	tgg	tgt	aaa	gaa	gtt	734
Arg	Lys	Pro	Asn	Ala	Ser	Gln	Ser	Leu	Leu	Val	Trp	Cys	Lys	Glu	Val	
206					211					216					221	
aca	aag	aac	tac	cga	gga	gta	aaa	atc	acc	aat	ttt	act	aca	tcg	tgg	782
Thr	Lys	Asn	Tyr	Arg	Gly	Val	Lys	Ile	Thr	Asn	Phe	Thr	Thr	Ser	Trp	
222					227					232					237	
aga	aat	ggt	tta	tct	ttt	tgt	gca	ata	tta	cac	cac	ttt	aga	cca	gat	830
Arg	Asn	Gly	Leu	Ser	Phe	Cys	Ala	Ile	Leu	His	His	Phe	Arg	Pro	Asp	
238					243					248					253	
tta	att	gac	tac	aag	tct	ctg	aat	cct	caa	gat	att	aaa	gag	aac	aac	878
Leu	Ile	Asp	Tyr	Lys	Ser	Leu	Asn	Pro	Gln	Asp	Ile	Lys	Glu	Asn	Asn	
254					259					264					269	
aaa	aag	gca	tac	gat	gga	ttt	gcc	agc	ata	gga	att	tcc	cga	tta	ttg	926
Lys	Lys	Ala	Tyr	Asp	Gly	Phe	Ala	Ser	Ile	Gly	Ile	Ser	Arg	Leu	Leu	
270					275					280					285	
gaa	cct	tct	gat	atg	gta	tta	tta	gca	att	cct	gat	aaa	ctg	act	gtt	974
Glu	Pro	Ser	Asp	Met	Val	Leu	Leu	Ala	Ile	Pro	Asp	Lys	Leu	Thr	Val	
286					291					296					301	
atg	act	tat	ctc	tat	caa	ata	agg	gca	cat	ttc	agt	ggc	caa	gaa	cta	1022
Met	Thr	Tyr	Leu	Tyr	Gln	Ile	Arg	Ala	His	Phe	Ser	Gly	Gln	Glu	Leu	
302					307					312					317	
aat	gtc	gtt	cag	ata	gag	gaa	aac	agc	agt	aaa	agc	aca	tat	aaa	gtt	1070
Asn	Val	Val	Gln	Ile	Glu	Glu	Asn	Ser	Ser	Lys	Ser	Thr	Tyr	Lys	Val	
318					323					328					333	
gga	aac	tat	gaa	aca	gat	aca	aac	agt	tct	gtt	gat	caa	gaa	aaa	ttc	1118
Gly	Asn	Tyr	Glu	Thr	Asp	Thr	Asn	Ser	Ser	Val	Asp	Gln	Glu	Lys	Phe	
334					339					344					349	
tat	gca	gag	ctt	agt	gat	ctg	aag	cgg	gag	cct	gaa	cta	caa	cag	cct	1166
Tyr	Ala	Glu	Leu	Ser	Asp	Leu	Lys	Arg	Glu	Pro	Glu	Leu	Gln	Gln	Pro	

350	355	360	365	
atc agc gga gca gta	gac ttc tta tca	cag gat gac tct gta	ttt gta	1214
Ile Ser Gly Ala Val	Asp Phe Leu Ser	Gln Asp Asp Ser Val	Phe Val	
366	371	376	381	
aat gat agc ggg gtt	gga gag tca gaa	agt gag cat caa act	cct gat	1262
Asn Asp Ser Gly Val	Gly Glu Ser Glu Ser	Glu His Gln Thr Pro	Asp	
382	387	392	397	
gat cac ctt agt cca	agc aca gcc tcc cct	tac tgt cgc agg act	aaa	1310
Asp His Leu Ser Pro	Ser Thr Ala Ser Pro	Tyr Cys Arg Arg Thr	Lys	
398	403	408	413	
agt gac aca gaa ccc	cag aag tct cag cag	agc tct gga agg act	tca	1358
Ser Asp Thr Glu Pro	Gln Lys Ser Gln Gln	Ser Ser Gly Arg Thr	Ser	
414	419	424	429	
gga tct gat gac cct	gga ata tgt tcc aat	aca gat tca acc caa	gca	1406
Gly Ser Asp Asp Pro	Gly Ile Cys Ser Asn	Thr Asp Ser Thr Gln	Ala	
430	435	440	445	
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Gln Val Leu Leu Gly	Lys Lys Arg Leu Leu	Lys Ala Glu Thr Leu	Glu	
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Leu Ser Asp Leu Tyr	Val Ser Asp Lys Lys	Lys Asp Met Ser Pro	Pro	
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Gly Ser Asn Leu Glu	Lys Glu Lys Leu Glu	Asn Ser Arg Ser Leu	Glu	
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Cys Arg Ser Asp Pro	Glu Ser Pro Ile Lys	Gln Thr Ser Leu Ser	Pro	
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Thr Ser Lys Leu Gly	Tyr Ser Tyr Ser Arg	Asp Leu Asp Leu Ala	Lys	
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Lys Lys His Ala Ser	Leu Arg Gln Thr Glu	Ser Asp Pro Asp Ala	Asp	
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aga acc act tta aat	cat gca gat cat tca	tca aaa ata gtc cag	cat	1790
Arg Thr Thr Leu Asn	His Ala Asp His Ser	Ser Lys Ile Val Gln	His	
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Arg Leu Leu Ser Arg	Gln Glu Glu Leu Lys	Glu Arg Ala Arg Val	Leu	
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Lys Gly Phe Lys Asp Thr Ser Gln Tyr Val Val Gly Glu Leu Ala Ala	
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 Gln Asp His Leu Ile Lys Glu Thr Pro Asp Thr Leu Ser Asp Pro Gln  
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Lys Phe Trp Lys Tyr Gly Lys His Ser Val Pro Gln Ile Arg Ser Ala	
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Tyr Phe Glu Leu Val Ser Ala Leu Cys Gln Arg Ile Pro Gln Leu Met	
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Leu Ala Thr Val Ile Tyr Pro Tyr Leu Leu Pro Phe Ile Ser Lys Leu	
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Ile Met Gln Gln Asn Leu Gly Glu Glu Glu Ile Glu Gln Met Leu Val	
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417					422					427					432	
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Glu	Ser	Asn	Lys	Glu	Asn	Glu	Lys	Cys	Val	Ser	Ser	Glu	Gly	Glu	Lys	
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Ile	Glu	Gly	Trp	Glu	Leu	Thr	Thr	Glu	Pro	Ser	Leu	Thr	His	Asn	Ser	
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Ser	Gly	Leu	Leu	Ser	Pro	Leu	Arg	Lys	Lys	Pro	Leu	Glu	Asp	Leu	Val	
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Cys	Lys	Leu	Ala	Asp	Ile	Ser	Ile	Asn	Tyr	Val	Asn	Glu	Arg	Lys	Ser	
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Glu	Gln	His	Leu	Arg	Phe	Leu	Ser	Thr	Leu	Leu	Asp	Ser	Phe	Ser	Ser	
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Cys Pro Ser Ser Asp Lys His Ala Leu Val Thr Pro Trp Leu Lys Gly				
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Leu Ile Cys Lys Leu Lys Asn Thr Trp Leu Ser Gly Val Asn Leu Leu				
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Ser Ala Leu Trp Leu Lys Asn Gln Val Gln Ala Ser Ser Leu Asp Ile				
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Asn Ser Leu Gln Val Leu Leu Ser Ala Val Asp Asp Leu Leu Asn Thr				
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Val Met Pro Asn Asp Ser Glu Trp Glu Lys Met Arg Gln Ser Leu Pro	
881 886 891 896	
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Ala Leu Arg Lys Glu Thr Val Leu Glu Asn Asn Glu Leu Glu Lys Ile	
945 950 955 960	
att gca gaa ctg ctt tat tca ctg cag tgg tgt gaa gaa tta gat aac	2928
Ile Ala Glu Leu Leu Tyr Ser Leu Gln Trp Cys Glu Glu Leu Asp Asn	
961 966 971 976	
cca cct att ttt cta att gga ttt tgt gaa ata ctt caa aaa atg aat	2976
Pro Pro Ile Phe Leu Ile Gly Phe Cys Glu Ile Leu Gln Lys Met Asn	
977 982 987 992	
att acg tat gat aac tta cgt gta ctt ggt aat acg tcg ggc ctt ttg	3024
Ile Thr Tyr Asp Asn Leu Arg Val Leu Gly Asn Thr Ser Gly Leu Leu	
993 998 1003 1008	
cag ctg tta ttt aac agg tcc aga gaa cat ggc aca ctg tgg tct ctt	3072
Gln Leu Leu Phe Asn Arg Ser Arg Glu His Gly Thr Leu Trp Ser Leu	
1009 1014 1019 1024	
att att gct aag ttg atc ctt tcc cga agc att tca tct gat gaa gta	3120
Ile Ile Ala Lys Leu Ile Leu Ser Arg Ser Ile Ser Ser Asp Glu Val	
1025 1030 1035 1040	
aaa cca cat tat aag aga aaa gaa agt ttt ttt cca cta act gaa ggc	3168
Lys Pro His Tyr Lys Arg Lys Glu Ser Phe Phe Pro Leu Thr Glu Gly	
1041 1046 1051 1056	
aat ttg cat acc att caa agt cta tgt cca ttt ttg tca aaa aaa aaa	3216
Asn Leu His Thr Ile Gln Ser Leu Cys Pro Phe Leu Ser Lys Lys Lys	
1057 1062 1067 1072	
aaa aaa gaa ttt agt gct caa tgt ata cct gct ctt ttg ggc tgg act	3264
Lys Lys Glu Phe Ser Ala Gln Cys Ile Pro Ala Leu Leu Gly Trp Thr	
1073 1078 1083 1088	

aag aaa gat ctt tgc agc act aat gga ggt ttt gga cat ctt gcc att	3312
Lys Lys Asp Leu Cys Ser Thr Asn Gly Gly Phe Gly His Leu Ala Ile	
1089 1094 1099 1104	
ttc aat tct tgt ctg caa acc aaa agt ata gat gat gga gag cta tta	3360
Phe Asn Ser Cys Leu Gln Thr Lys Ser Ile Asp Asp Gly Glu Leu Leu	
1105 1110 1115 1120	
cat gga ata tta aaa atc ata ata tcc tgg aag aaa gag cat gaa gat	3408
His Gly Ile Leu Lys Ile Ile Ile Ser Trp Lys Lys Glu His Glu Asp	
1121 1126 1131 1136	
att ttt ctt ttc agt tgt aat cta tca gaa gca agt cca gag gta ctg	3456
Ile Phe Leu Phe Ser Cys Asn Leu Ser Glu Ala Ser Pro Glu Val Leu	
1137 1142 1147 1152	
ggt gta aat ata gaa ata atc cgg ttt ctt tcc ctg ttt ctg aaa tac	3504
Gly Val Asn Ile Glu Ile Ile Arg Phe Leu Ser Leu Phe Leu Lys Tyr	
1153 1158 1163 1168	
tgc tca tcc cct ttg gca gag agt gag tgg gac ttc atc atg tgc tcc	3552
Cys Ser Ser Pro Leu Ala Glu Ser Glu Trp Asp Phe Ile Met Cys Ser	
1169 1174 1179 1184	
atg ttg gct tgg ttg gag aca aca agt gag aat cag gca ttg tat tct	3600
Met Leu Ala Trp Leu Glu Thr Thr Ser Glu Asn Gln Ala Leu Tyr Ser	
1185 1190 1195 1200	
att cca ctt gtg caa ctg ttt gcc tgt gtc agc tgt gat ttg gcc tgt	3648
Ile Pro Leu Val Gln Leu Phe Ala Cys Val Ser Cys Asp Leu Ala Cys	
1201 1206 1211 1216	
gac ctc agt gct ttc ttt gat tcc aca act ctg gat acc att ggc aat	3696
Asp Leu Ser Ala Phe Phe Asp Ser Thr Thr Leu Asp Thr Ile Gly Asn	
1217 1222 1227 1232	
ctt cct gta aat cta atc agt gaa tgg aaa gaa ttt ttt tcc caa ggc	3744
Leu Pro Val Asn Leu Ile Ser Glu Trp Lys Glu Phe Phe Ser Gln Gly	
1233 1238 1243 1248	
atc cac agt ttg ctt tta cct att ttg gtg act gtt aca gga gaa aac	3792
Ile His Ser Leu Leu Leu Pro Ile Leu Val Thr Val Thr Gly Glu Asn	
1249 1254 1259 1264	
aaa gat gtg tct gaa aca tcc ttt cag aat gca atg ctg aaa ccc atg	3840
Lys Asp Val Ser Glu Thr Ser Phe Gln Asn Ala Met Leu Lys Pro Met	
1265 1270 1275 1280	
tgt gaa aca tta acg tat atc tca aag gaa cag cta ttg agt cac aaa	3888
Cys Glu Thr Leu Thr Tyr Ile Ser Lys Glu Gln Leu Leu Ser His Lys	
1281 1286 1291 1296	
ctt cct gca aga tta gtt gct gac caa aaa aca aac tta cca gaa tat	3936
Leu Pro Ala Arg Leu Val Ala Asp Gln Lys Thr Asn Leu Pro Glu Tyr	
1297 1302 1307 1312	
ctc cag act ttg tta aat aca ttg gcc cca tta ctc ctc ttc aga gct	3984

Leu Gln Thr Leu Leu Asn Thr Leu Ala Pro Leu Leu Leu Phe Arg Ala	
1313	1318 1323 1328
agg cct gtg caa att gct gtt tat cat atg cta tac aaa ttg atg cct	4032
Arg Pro Val Gln Ile Ala Val Tyr His Met Leu Tyr Lys Leu Met Pro	
1329	1334 1339 1344
gaa tta cca cag tat gat cag gat aat cta aag tca tac gga gat gaa	4080
Glu Leu Pro Gln Tyr Asp Gln Asp Asn Leu Lys Ser Tyr Gly Asp Glu	
1345	1350 1355 1360
gaa gaa gag cca gcc ttg tca cca cca gca gca ctg atg tct ctt ctt	4128
Glu Glu Glu Pro Ala Leu Ser Pro Pro Ala Ala Leu Met Ser Leu Leu	
1361	1366 1371 1376
agc att caa gag gac tta cta gaa aat gtt ttg ggg tgt att cct gtt	4176
Ser Ile Gln Glu Asp Leu Leu Glu Asn Val Leu Gly Cys Ile Pro Val	
1377	1382 1387 1392
gga cag ata gtt act att aaa cca ctg agt gaa gac ttc tgt tat gtt	4224
Gly Gln Ile Val Thr Ile Lys Pro Leu Ser Glu Asp Phe Cys Tyr Val	
1393	1398 1403 1408
ctg gga tac ctt ctc act tgg aaa tta ata cta act ttc ttc aaa gct	4272
Leu Gly Tyr Leu Leu Thr Trp Lys Leu Ile Leu Thr Phe Phe Lys Ala	
1409	1414 1419 1424
gca tca tca cag ctt cgg gct ttg tat tcc atg tat ctt cgg aaa aca	4320
Ala Ser Ser Gln Leu Arg Ala Leu Tyr Ser Met Tyr Leu Arg Lys Thr	
1425	1430 1435 1440
aag agt ttg aat aaa ttg ctc tat cac ctg ttc agg ctt atg cca gaa	4368
Lys Ser Leu Asn Lys Leu Leu Tyr His Leu Phe Arg Leu Met Pro Glu	
1441	1446 1451 1456
aat cca acc tat gca gag aca gca gtt gag gtc cca aat aag gac cct	4416
Asn Pro Thr Tyr Ala Glu Thr Ala Val Glu Val Pro Asn Lys Asp Pro	
1457	1462 1467 1472
aaa aca ttc ttt act gag gag ctc cag ctg agt att aga gaa aca aca	4464
Lys Thr Phe Phe Thr Glu Glu Leu Gln Leu Ser Ile Arg Glu Thr Thr	
1473	1478 1483 1488
atg ctt cca tac cac att cca cac ttg gct tgt tca gtc tat cat atg	4512
Met Leu Pro Tyr His Ile Pro His Leu Ala Cys Ser Val Tyr His Met	
1489	1494 1499 1504
aca tta aaa gac ttg cct gcc atg gtt agg ttg tgg tgg aat agc agt	4560
Thr Leu Lys Asp Leu Pro Ala Met Val Arg Leu Trp Trp Asn Ser Ser	
1505	1510 1515 1520
gag aag cgt gtt ttc aat att gtg gat aga ttt aca agc aag tat gtc	4608
Glu Lys Arg Val Phe Asn Ile Val Asp Arg Phe Thr Ser Lys Tyr Val	
1521	1526 1531 1536
agc agt gtt ctt tct ttt caa gaa ata tct tct gta caa aca agt aca	4656
Ser Ser Val Leu Ser Phe Gln Glu Ile Ser Ser Val Gln Thr Ser Thr	

1537	1542	1547	1552	
caa cta ttt aat ggc atg acg gtt aaa gct cga gct act act cga gag				4704
Gln Leu Phe Asn Gly Met Thr Val Lys Ala Arg Ala Thr Thr Arg Glu				
1553	1558	1563	1568	
gta atg gct act tat act att gag gac ata gtt att gaa ctt ata ata				4752
Val Met Ala Thr Tyr Thr Ile Glu Asp Ile Val Ile Glu Leu Ile Ile				
1569	1574	1579	1584	
caa ctg cct tca aat tat cca ctg ggt tca ata ata gta gaa agt ggg				4800
Gln Leu Pro Ser Asn Tyr Pro Leu Gly Ser Ile Ile Val Glu Ser Gly				
1585	1590	1595	1600	
aaa aga gta gga gta gct gtt cag cag tgg cgg aac tgg atg ctg cag				4848
Lys Arg Val Gly Val Ala Val Gln Gln Trp Arg Asn Trp Met Leu Gln				
1601	1606	1611	1616	
tta agc act tac ctc acc cat cag aat gga agt att atg gaa ggc tta				4896
Leu Ser Thr Tyr Leu Thr His Gln Asn Gly Ser Ile Met Glu Gly Leu				
1617	1622	1627	1632	
gct tta tgg aaa aat aac gta gac aaa cgt ttt gag ggt gtt gaa gat				4944
Ala Leu Trp Lys Asn Asn Val Asp Lys Arg Phe Glu Gly Val Glu Asp				
1633	1638	1643	1648	
tgc atg atc tgt ttc tca gtc att cac ggt ttc aac tat tcc ctt ccc				4992
Cys Met Ile Cys Phe Ser Val Ile His Gly Phe Asn Tyr Ser Leu Pro				
1649	1654	1659	1664	
aaa aaa gcc tgt aga aca tgc aag aaa aaa ttc cat tca gcc tgc ttg				5040
Lys Lys Ala Cys Arg Thr Cys Lys Lys Lys Phe His Ser Ala Cys Leu				
1665	1670	1675	1680	
tac aaa tgg ttt aca tct agc aac aaa tcc act tgt cca ctg tgt cgt				5088
Tyr Lys Trp Phe Thr Ser Ser Asn Lys Ser Thr Cys Pro Leu Cys Arg				
1681	1686	1691	1696	
gag acg ttt ttc tga gatttttttc actggaaggg atccctgaag tacatcaaac				5143
Glu Thr Phe Phe *				
1697				
aaaggcattg gatttggatc cgtctgaaaag tgtggatgtg ggggaagccag tgagcattac				5203
ttttaaatag gaccttctct ggaaaaattat tttggttaat gtaataatcc taaaatcagg				5263
tttacttaac tttagattgc tttgtaaattg tttggaaact ttctttttaca aaagaatatt				5323
acatatttga gagaaaatat ttctattaat ggtttaattt ctttgtatat ttaaaaaataa				5383
atatgaaaaa cccctaaatt acagaattgg aatttgtgaa aagattgcac aactatatta				5443
ttgataaacc cattccgttt gttgatctgt gttttagaat agtccaagtg aagcaaaacg				5503
aactgagaga gctgatttac atctatagat attttaagcc ttattttatta gttatgacaa				5563
taaattagta ttctgatatt tgtagattat tttaatgata aaaatgacac taagctatta				5623



tatttcaa atgcagaaaa ataataatat aaatgccctt gtacccttca cataactattt 7363  
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 <213> Homo sapiens

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 <222> (317)..(751)

<400> 366

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 agcttgcacc tgccagtcca totgacatca aagccagtgt ctctaattggg gacaccaccc 180  
 tcctctgcag caggaggcag agctgtggga tgaatgaggt tcgccagggtc tcccttacct 240  
 atcctgggtc cccagctcct tctcactctc ttcccttgca gcctcgaagc ggaggatccc 300  
 tgtgtcccag ccgggc atg gcc gac ccc cac cag ctt ttc gat gac aca 349  
 Met Ala Asp Pro His Gln Leu Phe Asp Asp Thr  
 1 5  
 agt tca gcc cag agc cgg ggc tat ggg gcc cag cgg gca cct ggt ggc 397  
 Ser Ser Ala Gln Ser Arg Gly Tyr Gly Ala Gln Arg Ala Pro Gly Gly  
 12 17 22 27  
 cta agt tat cct gca gcc tct ccc acg ccc cat gca gcc ttc ctg gct 445  
 Leu Ser Tyr Pro Ala Ala Ser Pro Thr Pro His Ala Ala Phe Leu Ala  
 28 33 38 43  
 gac ccg gtg tcc aac atg gcc atg gcc tat ggg agc agc ctg gcc gcg 493  
 Asp Pro Val Ser Asn Met Ala Met Ala Tyr Gly Ser Ser Leu Ala Ala  
 44 49 54 59  
 cag ggc aag gag ctg gtg gat aag aac gtg agt ggg cgg ggc tgg tgg 541  
 Gln Gly Lys Glu Leu Val Asp Lys Asn Val Ser Gly Arg Gly Trp Trp  
 60 65 70 75  
 gag tgg ggg gat gca cgg ggc cac agg gct tca gac ttg agc tct gcc 589  
 Glu Trp Gly Asp Ala Arg Gly His Arg Ala Ser Asp Leu Ser Ser Ala  
 76 81 86 91  
 tcc cca gat cga ccg ctt cat ccc cat cac caa gct caa gta tta ctt 637  
 Ser Pro Asp Arg Pro Leu His Pro His His Gln Ala Gln Val Leu Leu  
 92 97 102 107  
 tgc tgt gga cac cat gta tgt ggg cag aaa gct ggg cct gct gtt ctt 685  
 Cys Cys Gly His His Val Cys Gly Gln Lys Ala Gly Pro Ala Val Leu



108	113	118	123	
ccc cta cct aca cca gga ctg gga agt gca gta cca aca gga cac ccc				733
Pro Leu Pro Thr Pro Gly Leu Gly Ser Ala Val Pro Thr Gly His Pro				
124	129	134	139	
ggc ggc ccc ccg ctt tga cgtcaa tgccccggac ctctacattc cagcaatggc				787
Gly Gly Pro Pro Leu *				
140	145			
tttcatcacc tacgttttgg tggctgggtct tgcgctgggg acccaggata gggttctcccc				847
agacctcttg gggctgcaag cgagctcagc cctggccttg ctgaccttg aggtgctggc				907
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ccccaaacca aggtgctgag agatctccag ctgcacaggc caccgcccc gggcgtggcc				1447
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 <222> (375) .. (599)

<220>  
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ctgggtgtca ctggctactc gcagtcttaa atctagtagg gccgaaagta ctagaaggag	180

gttgtccaga gaggtctgcc ctcaaaatgc tcctgaaaga tgcttgctta tgcttttctt 240  
 taaaaattat ttctggggaa gggcggggag tggtcacagg atcttatatt ctctttatctt 300  
 ttacttaatt tgcattgtat ttttagaact ccccttttta agggtcacat tttgcctcag 360  
 aaaaccctgt ctga atg tct cct gtt tgt cgg tca gga ctg act ctg cct 410  
 Met Ser Pro Val Cys Arg Ser Gly Leu Thr Leu Pro  
 1 5 10  
 ttt ctt tcc ttt tcc atg tgc cac tcc tgt cct ccc ttt gcc ctg cct 458  
 Phe Leu Ser Phe Ser Met Cys His Ser Cys Pro Pro Phe Ala Leu Pro  
 13 18 23 28  
 gat ttc tgc act gtc ctg tcc cac ctg tct gtc tcc tct tgg ttt tgc 506  
 Asp Phe Cys Thr Val Leu Ser His Leu Ser Val Ser Ser Trp Phe Cys  
 29 34 39 44  
 ccg tgt cag cct ccc ctt ccg tgc cct ctg ccc ccc ttg cag aac aag 554  
 Pro Cys Gln Pro Pro Leu Pro Cys Pro Leu Pro Pro Leu Gln Asn Lys  
 45 50 55 60  
 acc gcg aaa ggc agc ctg agc aca gag cag tgg gag cgg ggg tga ggg 602  
 Thr Ala Lys Gly Ser Leu Ser Thr Glu Gln Ser Glu Arg Gly \*  
 61 66 71  
 gggcagtggtg ctggtgggaa tggaaaggac agcaagcaca ggtgagtcgg ggccaccggg 662  
 ctccctgcat cctgccccgg ctcccagcag gcgtcgttgc ctctgccctc ctgctcgtc 722  
 tatgctctgc caccagcatt tcattcctgtg gatgacaacg ccagggtggat gcagtgttct 782  
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 ccactgccaa tgggggtgcag ggtgactgtt cctgaaggca gcccttcagg gcacagctgg 902  
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<210> 368  
 <211> 839  
 <212> DNA  
 <213> Homo sapiens

<220>  
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 <222> (61) .. (429)

<400> 368  
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 atg tgg aat ttt acc ctt ata tca aag gta aag att tcc cgg gag gtg 108

Met	Trp	Asn	Phe	Thr	Leu	Ile	Ser	Lys	Val	Lys	Ile	Ser	Arg	Glu	Val	
1				5					10					15		
act	atg	att	gcc	agc	aaa	ttc	ggt	atc	ggc	cag	cag	gtc	cgc	cat	tcc	156
Thr	Met	Ile	Ala	Ser	Lys	Phe	Gly	Ile	Gly	Gln	Gln	Val	Arg	His	Ser	
17					22				27					32		
ctg	tta	ggt	tat	ctc	gga	gtg	gtc	gtg	gat	atc	gac	ccg	gtt	tat	tcg	204
Leu	Leu	Gly	Tyr	Leu	Gly	Val	Val	Val	Asp	Ile	Asp	Pro	Val	Tyr	Ser	
33					38				43					48		
ctc	tct	gaa	ccg	tcg	cct	gat	gag	ctg	gcg	gtg	aat	gac	gag	ctt	cgc	252
Leu	Ser	Glu	Pro	Ser	Pro	Asp	Glu	Leu	Ala	Val	Asn	Asp	Glu	Leu	Arg	
49					54				59					64		
gcc	gct	ccg	tgg	tat	cac	gta	gtg	atg	gag	gac	gat	aac	ggc	cta	ccg	300
Ala	Ala	Pro	Trp	Tyr	His	Val	Val	Met	Glu	Asp	Asp	Asn	Gly	Leu	Pro	
65					70				75					80		
gtt	cat	acc	tac	ctg	gct	gaa	gcc	cag	cta	agt	agc	gaa	ttg	cag	gat	348
Val	His	Thr	Tyr	Leu	Ala	Glu	Ala	Gln	Leu	Ser	Ser	Glu	Leu	Gln	Asp	
81					86				91					96		
gaa	cat	cct	gaa	cag	cca	tcc	atg	gat	gag	ctg	gcg	cag	acc	atc	cgc	396
Glu	His	Pro	Glu	Gln	Pro	Ser	Met	Asp	Glu	Leu	Ala	Gln	Thr	Ile	Arg	
97					102				107					112		
aaa	caa	ctc	cag	gcc	ccg	cgt	ctg	cgt	aac	taa	tccctgaa	caa	aatccccg			447
Lys	Gln	Leu	Gln	Ala	Pro	Arg	Leu	Arg	Asn	*						
113					118				123							
gaaggttttt	gccttcgagg	gattttttat	ttggccaggc	ccaggcgagg	gatctcaata											507
gccggggcagc	gatccatcac	cacatttaac	ccggcatccc	gtgccagtac	tgcgcgttgc											567
tcattaatca	ccccagttg	catccagaga	gttttcgcgc	caatggcaat	agcttctgt											627
gccacgcccc	acgccgcttc	tgaattacgg	aaaacatcga	ccatatcgac	tttttcggga											687
acgtctgcc	gcgtgccata	ccccttctgg	cccagcagcg	ttttgccggc	aacttttggc											747
gaaaccggaa	tgacgtgata	cccctggctg	agtagatatt	tcatacgcg	atagctggga											807
cgatcggggt	tgctgcttgc	cccaccagc	gc													839

<210> 369  
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 <212> DNA  
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 <222> (296) .. (2413)

<400> 369

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agcggaggag tcgtgtcgtg cctgagagcg cagctgtgct cctgggcacc gcgcagtccg 240

ccccgcggc tcctggccag accacccta ggacccctg cccaagtcg cagcc atg 298  
Met  
1

aac tac ctg cgg cgc cgc ctg tgc gac agc aac ttt atg gcc aat ctg 346  
Asn Tyr Leu Arg Arg Arg Leu Ser Asp Ser Asn Phe Met Ala Asn Leu  
2 7 12 17

cca aat ggg tac atg aca gac ctg cag cgt ccg cag ccg ccc cca ccg 394  
Pro Asn Gly Tyr Met Thr Asp Leu Gln Arg Pro Gln Pro Pro Pro Pro  
18 23 28 33

ccg ccc ggt gcc cac agc ccc gga gcc acg ccc ggt ccc ggg acc gcc 442  
Pro Pro Gly Ala His Ser Pro Gly Ala Thr Pro Gly Pro Gly Thr Ala  
34 39 44 49

act gcc gag agg tcc tcc ggg gtc gcc cca gcg gcc tct ccg gcc gcc 490  
Thr Ala Glu Arg Ser Ser Gly Val Ala Pro Ala Ala Ser Pro Ala Ala  
50 55 60 65

cct agc ccc ggg tcc tgc ggg ggc ggt ggc ttc ttc tgc tgc ctg tcc 538  
Pro Ser Pro Gly Ser Ser Gly Gly Gly Gly Phe Phe Ser Ser Leu Ser  
66 71 76 81

aac gcg gtc aag cag acc acg gcg gcg gca gct gcc acc ttc agc gag 586  
Asn Ala Val Lys Gln Thr Thr Ala Ala Ala Ala Ala Thr Phe Ser Glu  
82 87 92 97

cag gtg ggc ggc ggc tct ggg ggc gca ggc cgc ggg gga gcc gcc tcc 634  
Gln Val Gly Gly Gly Ser Gly Gly Ala Gly Arg Gly Gly Ala Ala Ser  
98 103 108 113

agg gtg ctg ctg gtc atc gac gag ccg cac acc gac tgg gca aaa tac 682  
Arg Val Leu Leu Val Ile Asp Glu Pro His Thr Asp Trp Ala Lys Tyr  
114 119 124 129

ttc aaa ggg aaa aag atc cat gga gaa att gac att aaa gta gaa cag 730  
Phe Lys Gly Lys Lys Ile His Gly Glu Ile Asp Ile Lys Val Glu Gln  
130 135 140 145

gcc gaa ttc tct gat ctg aac ctt gtg gcc cat gcc aat ggt gga ttc 778  
Ala Glu Phe Ser Asp Leu Asn Leu Val Ala His Ala Asn Gly Gly Phe  
146 151 156 161

tct gtg gat atg gaa gtt ctt cgg aat ggg gtg aag gtc gtg cgg tct 826  
Ser Val Asp Met Glu Val Leu Arg Asn Gly Val Lys Val Val Arg Ser  
162 167 172 177

ctg aag ccg gat ttt gtg ctg atc cgc cag cac gcc ttc agc atg gca	874
Leu Lys Pro Asp Phe Val Leu Ile Arg Gln His Ala Phe Ser Met Ala	
178 183 188 193	
cgc aac gga gac tac cgc agt ttg gtc att ggg ctg cag tat gct gga	922
Arg Asn Gly Asp Tyr Arg Ser Leu Val Ile Gly Leu Gln Tyr Ala Gly	
194 199 204 209	
atc ccc agt gtt aac tcc ttg cat tct gtc tac aac ttc tgt gac aag	970
Ile Pro Ser Val Asn Ser Leu His Ser Val Tyr Asn Phe Cys Asp Lys	
210 215 220 225	
ccc tgg gtg ttt gcc cag atg gtt cga ctg cat aag aaa ctg ggg aca	1018
Pro Trp Val Phe Ala Gln Met Val Arg Leu His Lys Lys Leu Gly Thr	
226 231 236 241	
gaa gaa ttc cct cta att gat cag acc ttc tac ccc aat cac aaa gaa	1066
Glu Glu Phe Pro Leu Ile Asp Gln Thr Phe Tyr Pro Asn His Lys Glu	
242 247 252 257	
atg ctc agc agt aca acg tac ccc gtg gtt gtg aag atg ggg cac gca	1114
Met Leu Ser Ser Thr Thr Tyr Pro Val Val Val Lys Met Gly His Ala	
258 263 268 273	
cac tct ggg atg ggc aag gtc aag gtt gac aac cag cat gac ttc cag	1162
His Ser Gly Met Gly Lys Val Lys Val Asp Asn Gln His Asp Phe Gln	
274 279 284 289	
gac atc gca agt gtc gtg gca ctg acc aag acg tat gcc act gcc gag	1210
Asp Ile Ala Ser Val Val Ala Leu Thr Lys Thr Tyr Ala Thr Ala Glu	
290 295 300 305	
ccc ttc atc gat gcc aaa tat gac gtg cgt gtc cag aag att ggg cag	1258
Pro Phe Ile Asp Ala Lys Tyr Asp Val Arg Val Gln Lys Ile Gly Gln	
306 311 316 321	
aac tac aag gcc tac atg agg acg tca gtg tca ggg aac tgg aag acc	1306
Asn Tyr Lys Ala Tyr Met Arg Thr Ser Val Ser Gly Asn Trp Lys Thr	
322 327 332 337	
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Asn Thr Gly Ser Ala Met Leu Glu Gln Ile Ala Met Ser Asp Arg Tyr	
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aag ctg tgg gtg gac acg tgc tca gag att ttt ggg gga ctg gac atc	1402
Lys Leu Trp Val Asp Thr Cys Ser Glu Ile Phe Gly Gly Leu Asp Ile	
354 359 364 369	
tgc gca gtg gaa gcg cta cat ggc aag gac gga agg gat cac atc att	1450
Cys Ala Val Glu Ala Leu His Gly Lys Asp Gly Arg Asp His Ile Ile	
370 375 380 385	
gag gtg gtg ggt tcc tcc atg ccg ctc att ggt gac cac cag gat gaa	1498
Glu Val Val Gly Ser Ser Met Pro Leu Ile Gly Asp His Gln Asp Glu	
386 391 396 401	
gac aaa cag ctc atc gta gag ctc gtg gtc aac aag atg gct cag gcc	1546

Asp Lys Gln Leu Ile Val Glu Leu Val Val Asn Lys Met Ala Gln Ala  
402 407 412 417

ctg ccc cgg cag cga cag cgc gat gcc tcc cct ggc agg ggc tcc cat 1594  
Leu Pro Arg Gln Arg Gln Arg Asp Ala Ser Pro Gly Arg Gly Ser His  
418 423 428 433

ggc cag act ccg tcc cca ggg gcc ctg ccc ttg ggc cgc cag acc tcc 1642  
Gly Gln Thr Pro Ser Pro Gly Ala Leu Pro Leu Gly Arg Gln Thr Ser  
434 439 444 449

cag cag ccc gca ggg ccc ccg gct cag cag cga ccc cca cca cag ggc 1690  
Gln Gln Pro Ala Gly Pro Pro Ala Gln Gln Arg Pro Pro Pro Gln Gly  
450 455 460 465

ggc cct cca cag ccg ggt cca ggc ccc cag cgc cag gga ccc cca ttg 1738  
Gly Pro Pro Gln Pro Gly Pro Gly Pro Gln Arg Gln Gly Pro Pro Leu  
466 471 476 481

cag cag cgc ccg ccc ccg cag ggc cag cag cac ctt tca ggc ctt gga 1786  
Gln Gln Arg Pro Pro Pro Gln Gly Gln Gln His Leu Ser Gly Leu Gly  
482 487 492 497

ccc cca gct ggc agc ccc ctg ccc cag cgc ctt cca agt ccc acc tca 1834  
Pro Pro Ala Gly Ser Pro Leu Pro Gln Arg Leu Pro Ser Pro Thr Ser  
498 503 508 513

gcg ccc cag cag ccc gcg tcc cag gcc gcg ccg ccg acc cag ggt caa 1882  
Ala Pro Gln Gln Pro Ala Ser Gln Ala Ala Pro Pro Thr Gln Gly Gln  
514 519 524 529

ggc cgc caa tcc ccg cca gtg gcg gga ggc ccc ggg gcg cct cca gca 1930  
Gly Arg Gln Ser Arg Pro Val Ala Gly Gly Pro Gly Ala Pro Pro Ala  
530 535 540 545

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Ala Arg Pro Pro Ala Ser Pro Ser Pro Gln Arg Gln Ala Gly Pro Pro  
546 551 556 561

cag gct acc cgt cag aca tcc gtc tct ggc ccg gct ccg cca aag gcc 2026  
Gln Ala Thr Arg Gln Thr Ser Val Ser Gly Pro Ala Pro Pro Lys Ala  
562 567 572 577

tct ggg gcc cca ccg ggc ggg cag cag cgc cag ggc ccg ccc cag aaa 2074  
Ser Gly Ala Pro Pro Gly Gly Gln Gln Arg Gln Gly Pro Pro Gln Lys  
578 583 588 593

ccc cca ggc cca gcc ggc ccc aca cgc cag gcc agc cag gcg ggt ccc 2122  
Pro Pro Gly Pro Ala Gly Pro Thr Arg Gln Ala Ser Gln Ala Gly Pro  
594 599 604 609

gtg ccc cgc act ggg cca ccc acc acg cag cag cct cgg ccc agc ggc 2170  
Val Pro Arg Thr Gly Pro Pro Thr Thr Gln Gln Pro Arg Pro Ser Gly  
610 615 620 625

ccg ggc ccc gct gga cgt ccc aaa cca cag ctg gcc cag aaa ccc agc 2218  
Pro Gly Pro Ala Gly Arg Pro Lys Pro Gln Leu Ala Gln Lys Pro Ser

626	631	636	641	
cag gac gtg ccg cca	ccc gcc acc gcc gct	gca ggg gga cct ccg cac		2266
Gln Asp Val Pro Pro	Pro Ala Thr Ala Ala	Ala Gly Gly Pro Pro His		
642	647	652	657	
ccc cag ctc aac aaa	tcc cag tot ctg acc	aat gcc ttc aac ctt cca		2314
Pro Gln Leu Asn Lys	Ser Gln Ser Leu Thr	Asn Ala Phe Asn Leu Pro		
658	663	668	673	
gag cca gcc ccg ccc	agg ccc agc ctt agc	cag gac gag gtg aaa gct		2362
Glu Pro Ala Pro Pro	Arg Pro Ser Leu Ser	Gln Asp Glu Val Lys Ala		
674	679	684	689	
gag acc atc cgc agc	ctg agg aag tct ttc	gcc agc ctc ttc tcc gac		2410
Glu Thr Ile Arg Ser	Leu Arg Lys Ser Phe	Ala Ser Leu Phe Ser Asp		
690	695	700	705	
tga tacc ccactctgag	aacccccaaaa	tccttgggca acccttctct	gggccctgaa	2467
*				
706				
tccattttctc acttttggag	tctccaaatc ccttgagaac	ccatctcccg gttctccaag		2527
attccacctc tcattcctca	agatccccga gtaccttgag	aaacctgact cctcctggcc		2587
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acctattttcc catcataatt	ttccaaatcc tcaagaaacc	cctactgttg agccccttcc		2887
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acttccagga cccctcggtt	ccccagggga cccctcccc	agtttctctgc ctctgacagc		3067
tgtctttaaa tatgaaaact	ccaccatct tcccagaatc	ctttgcacac ggaaggccag		3127
tggtctccgc tccccacct	ttgctgtggt gtctgtgtct	gtgactgacg tggcctcctt		3187
ttgtgccgtg cttggcatat	gtggtcctcg ttcacgtg	gc cctgtggt gatgcgtgca		3247
gtgacgtgt ttatgtggtc	cgcacctccc cctgaccttc	actccttgcc tggactcacc		3307
ccaccttca gcggtctga	acccaagag aagagtcggg	aaacaaaata aacaagcaaa		3367
ggcccagcaa aaaaaaaaaa	a			3388

<210> 370  
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 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> CDS  
 <222> (353) .. (727)

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 ggaggaggga gggcgggccc cgacccttaa ccagagcgag gttgttgctt tgtgtccaca 180  
 gggaccagga gcgaaccatg atgccaggta ggaggggctg actggggcct gcgagcgct 240  
 gcctttcctg ctgggcagag gccctccaca tggggccaag cgggcccggg acaggagggc 300  
 agtcagatgg gcagggcctg agagcctccc tcctctcct aggtccctaa tc atg 355  
 Met  
 1  
 gac tcc cca aga gct ggc acc cac cag ggc ccc ctc gat gca gag aca 403  
 Asp Ser Pro Arg Ala Gly Thr His Gln Gly Pro Leu Asp Ala Glu Thr  
 2 7 12 17  
 gag gtc ggt gct gac cgc tgc acg tcg act gcc tac cag gag cag agg 451  
 Glu Val Gly Ala Asp Arg Cys Thr Ser Thr Ala Tyr Gln Glu Gln Arg  
 18 23 28 33  
 ccc cag gtg gag caa gtt ggc aaa cag gct cct ctc tcc cca ggg ctg 499  
 Pro Gln Val Glu Gln Val Gly Lys Gln Ala Pro Leu Ser Pro Gly Leu  
 34 39 44 49  
 ccg gca atg ggg ggg cct ggc ccc ggc ccc tgt gag gac ccc gcg ggt 547  
 Pro Ala Met Gly Gly Pro Gly Pro Gly Pro Cys Glu Asp Pro Ala Gly  
 50 55 60 65  
 gct ggg gga gca ggt gca ggg ggc tcc gag ccc ctg gtg act gtc acc 595  
 Ala Gly Gly Ala Gly Ala Gly Gly Ser Glu Pro Leu Val Thr Val Thr  
 66 71 76 81  
 gtg cag tgc gcc ttc aca gtg gcc ctg agg gca cga aga gga gcc gac 643  
 Val Gln Cys Ala Phe Thr Val Ala Leu Arg Ala Arg Arg Gly Ala Asp  
 82 87 92 97  
 ctg tcc agc ctg cgg gca ctg ctg ggc caa gcc cct ccc tca cca ggc 691  
 Leu Ser Ser Leu Arg Ala Leu Leu Gly Gln Ala Pro Pro Ser Pro Gly  
 98 103 108 113  
 cca gct tgg gca act cag tta cct agc ccc agg tga ggac gggcactggg 741  
 Pro Ala Trp Ala Thr Gln Leu Pro Ser Pro Arg \*  
 114 119 124  
 tccccatccc cgaggaggag tcgctgcaga gggcctggca ggacgcagct gcctgcccc 801



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gggggctgca gctgcagtgc aggggagccg ggggtcggcc ggtcctctac caggtggtgg      861
cccagcacag ctactccgcc caggggccag aggacctggg cttccgacag ggggacacgg      921
tggacgtcct gtgtgaagtg gaccaggcat ggctggaggg ccactgtgac ggccgcatcg      981
gcatcttccc caagtgttc gtggtccccg ccggccctcg gatgtcagga gccccggcc      1041
gcctgccccg atcccagcag ggagatcagc cctaattgatg ctgtgtccat gatgctttta      1101
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<210> 371
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<212> DNA
<213> Homo sapiens

<220>
<221> CDS
<222> (225)..(1568)

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<222> (1)...(2575)
<223> n = a,t,c or g

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<400> 371
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cctgctaggc tgcggcggca tggccccgcg gcccggcgcg acctctgcgg attgcatcg      180
tgtgtggcgg cggggcatgc ccagagcacc gggcacggcc ttca atg ggc gag gac      236
                               Met Gly Glu Asp
                               1

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acg gac acg cgg aaa att aac cac agc ttc ctg ogg gac cac agc tat      284
Thr Asp Thr Arg Lys Ile Asn His Ser Phe Leu Arg Asp His Ser Tyr
 5                      10                      15                      20

gtg act gaa gct gac atc atc tct acc gtt gag ttc aac cac acg gga      332
Val Thr Glu Ala Asp Ile Ile Ser Thr Val Glu Phe Asn His Thr Gly
21                      26                      31                      36

gag ctg ctg gcc aca ggt gac aag ggc ggc cgg gtc gtc atc ttc cag      380
Glu Leu Leu Ala Thr Gly Asp Lys Gly Gly Arg Val Val Ile Phe Gln
37                      42                      47                      52

cgg gaa cca gag agt aaa aat gcg ccc cac agc cag ggc gaa tac gac      428
Arg Glu Pro Glu Ser Lys Asn Ala Pro His Ser Gln Gly Glu Tyr Asp
53                      58                      63                      68

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gtg tac agc act ttc cag agc cac gag ccg gag ttt gac tat ctc aag	476
Val Tyr Ser Thr Phe Gln Ser His Glu Pro Glu Phe Asp Tyr Leu Lys	
69 74 79 84	
agc ctg gag ata gag gag aag atc aac aag atc aag tgg ctc cca cag	524
Ser Leu Glu Ile Glu Glu Lys Ile Asn Lys Ile Lys Trp Leu Pro Gln	
85 90 95 100	
cag aac gcc gcc cac tca ctc ctg tcc acc aac gat aaa act atc aaa	572
Gln Asn Ala Ala His Ser Leu Leu Ser Thr Asn Asp Lys Thr Ile Lys	
101 106 111 116	
tta tgg aag att acc gaa cga gat aaa agg ccc gaa gga tac aac ctg	620
Leu Trp Lys Ile Thr Glu Arg Asp Lys Arg Pro Glu Gly Tyr Asn Leu	
117 122 127 132	
aag gat gaa gag ggg aaa ctt aag gac ctg tcc acg gtg acg tca ctg	668
Lys Asp Glu Glu Gly Lys Leu Lys Asp Leu Ser Thr Val Thr Ser Leu	
133 138 143 148	
cag gtg cca gtg ctg aag ccc atg gat ctg atg gtg gag gtg agc cct	716
Gln Val Pro Val Leu Lys Pro Met Asp Leu Met Val Glu Val Ser Pro	
149 154 159 164	
cgg agg atc ttt gcc aat ggc cac acc tac cac atc aac tcc atc tcc	764
Arg Arg Ile Phe Ala Asn Gly His Thr Tyr His Ile Asn Ser Ile Ser	
165 170 175 180	
gtc aac agt gac tgc gag acc tac atg tgc gcg gat gac ctg cgc atc	812
Val Asn Ser Asp Cys Glu Thr Tyr Met Ser Ala Asp Asp Leu Arg Ile	
181 186 191 196	
aac ctc tgg cac ctg gcc atc acc gac agg agc ttc aac atc gtg gac	860
Asn Leu Trp His Leu Ala Ile Thr Asp Arg Ser Phe Asn Ile Val Asp	
197 202 207 212	
atc aag ccg gcc aac atg gag gac ctt acg gag gtg atc aca gca tct	908
Ile Lys Pro Ala Asn Met Glu Asp Leu Thr Glu Val Ile Thr Ala Ser	
213 218 223 228	
gag ttc cat ccg cac cac tgc aac ctc ttc gtc tac agc agc agc aag	956
Glu Phe His Pro His His Cys Asn Leu Phe Val Tyr Ser Ser Ser Lys	
229 234 239 244	
ggc tcc ctg cgg ctc tgc gac atg cgg gca gct gcc ctg tgt gac aag	1004
Gly Ser Leu Arg Leu Cys Asp Met Arg Ala Ala Ala Leu Cys Asp Lys	
245 250 255 260	
cat tcc aag ctc ttt gaa gag cct gag gac ccc agt aac cgc tca ttc	1052
His Ser Lys Leu Phe Glu Glu Pro Glu Asp Pro Ser Asn Arg Ser Phe	
261 266 271 276	
ttc tgc gaa atc atc tcc tcc gtg tcc gac gtg aag ttc agc cac agc	1100
Phe Ser Glu Ile Ile Ser Ser Val Ser Asp Val Lys Phe Ser His Ser	
277 282 287 292	
ggc cgc tac atg ctc acc cgg gac tac ctt aca gtc aag gtc tgg gac	1148

Gly	Arg	Tyr	Met	Leu	Thr	Arg	Asp	Tyr	Leu	Thr	Val	Lys	Val	Trp	Asp	
293					298					303					308	
ctg	aac	atg	gag	gca	aga	ccc	ata	gag	acc	tac	cag	gtc	cat	gac	tac	1196
Leu	Asn	Met	Glu	Ala	Arg	Pro	Ile	Glu	Thr	Tyr	Gln	Val	His	Asp	Tyr	
309					314					319					324	
ctt	cgg	agc	aag	ctc	tgt	tcc	ctg	tac	gag	aac	gac	tgc	att	ttc	gac	1244
Leu	Arg	Ser	Lys	Leu	Cys	Ser	Leu	Tyr	Glu	Asn	Asp	Cys	Ile	Phe	Asp	
325					330					335					340	
aag	ttt	gaa	tgt	gcc	tgg	aac	ggg	agc	gac	agc	gtc	atc	atg	acc	ggg	1292
Lys	Phe	Glu	Cys	Ala	Trp	Asn	Gly	Ser	Asp	Ser	Val	Ile	Met	Thr	Gly	
341					346					351					356	
gcc	tac	aac	aac	ttc	ttc	cgc	atg	ttc	gat	cgg	aac	acc	aag	cgg	gac	1340
Ala	Tyr	Asn	Asn	Phe	Phe	Arg	Met	Phe	Asp	Arg	Asn	Thr	Lys	Arg	Asp	
357					362					367					372	
gtg	acc	ctg	gag	gcc	tgc	agg	gaa	agc	agc	aag	ccc	cgg	gct	gtg	ctc	1388
Val	Thr	Leu	Glu	Ala	Ser	Arg	Glu	Ser	Ser	Lys	Pro	Arg	Ala	Val	Leu	
373					378					383					388	
aag	cca	cgg	cgc	gtg	tgc	gtg	ggg	ggc	aag	cgc	cgg	cgt	gat	gac	atc	1436
Lys	Pro	Arg	Arg	Val	Cys	Val	Gly	Gly	Lys	Arg	Arg	Arg	Asp	Asp	Ile	
389					394					399					404	
agt	gtg	gac	agc	ttg	gac	ttc	acc	aag	aag	atc	ctg	cac	acg	gcc	tgg	1484
Ser	Val	Asp	Ser	Leu	Asp	Phe	Thr	Lys	Lys	Ile	Leu	His	Thr	Ala	Trp	
405					410					415					420	
cac	ccg	gct	gag	aac	atc	att	gcc	atc	gcc	gcc	acc	aac	aac	ctg	tac	1532
His	Pro	Ala	Glu	Asn	Ile	Ile	Ala	Ile	Ala	Ala	Thr	Asn	Asn	Leu	Tyr	
421					426					431					436	
atc	ttc	cag	gac	aag	gta	aac	tct	gac	atg	cac	tag	gtat	gtgcagttcc			1582
Ile	Phe	Gln	Asp	Lys	Val	Asn	Ser	Asp	Met	His	*					
437					442					447						
cgccccctgc	caccagcct	catgcaagtc	atccccgaca	tgaccttcac	gaccgcaatg											1642
caaggagggg	aagaaagtca	cagcactgat	gaggacagct	gcagaggtgg	cagtgtgtgg											1702
acacaggaag	tttgggcccc	ctccctgccc	cagctttcct	aggccagaat	tgtgtttggc											1762
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ctgggtcccag	atcagggctc	cagggacaga	tgatgagtct	caaacgagcc	agccaggggt											2062
tcttttggtt	ataaatgggg	caattcgccc	tgtctcagag	ctgatgacct	caccgttgtt											2122

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ttttggatgg tgaattcatg ctgagaatgt gcagatgcaa gctcctctcc taggtcttct 2182
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gggtttgtct tctgtgtgcc tgtgtctca tctgattcac ctgccatttg ctgagcctct 2302
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tgcacgattt tttggaatct tcctcctgac tgtgaggtgg gtgttcattc atttctcca 2482
taaacaccaa cttctcgaag cgtgcctcgt gccaaagctgg cgtaatgtgg ttacgatgtc 2542
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<210> 372
<211> 7393
<212> DNA
<213> Homo sapiens

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<220>
<221> CDS
<222> (118)..(3012)

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atg gag ctg aat tct agc tca gag gac tcc aaa ggg agc aag cgt gtc 165
Met Glu Leu Asn Ser Ser Ser Glu Asp Ser Lys Gly Ser Lys Arg Val
1 5 10 15

cgt act aat tcc atg ggc tca gcc act ggc ccc ctt cct ggg aca aag 213
Arg Thr Asn Ser Met Gly Ser Ala Thr Gly Pro Leu Pro Gly Thr Lys
17 22 27 32

gta gaa ccc act gtt ctg gac aga aac tgc ccc tcc ccc gtc cta att 261
Val Glu Pro Thr Val Leu Asp Arg Asn Cys Pro Ser Pro Val Leu Ile
33 38 43 48

gac tgt ccc cac cca aac tgc aac aag aag tac aag cac atc aat gga 309
Asp Cys Pro His Pro Asn Cys Asn Lys Lys Tyr Lys His Ile Asn Gly
49 54 59 64

ctt aag tac cac caa gct cat gcc cat aca gat gat gac agc aag ccg 357
Leu Lys Tyr His Gln Ala His Ala His Thr Asp Asp Asp Ser Lys Pro
65 70 75 80

gaa gcg gat ggg gac agt gag tac gga gag gaa cct att ctc cat gca 405
Glu Ala Asp Gly Asp Ser Glu Tyr Gly Glu Glu Pro Ile Leu His Ala
81 86 91 96

gat ctt ggg agc tgc aac ggt gca tct gtc tca caa aaa ggt tcc ttg 453

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Asp	Leu	Gly	Ser	Cys	Asn	Gly	Ala	Ser	Val	Ser	Gln	Lys	Gly	Ser	Leu	
97					102					107					112	
tcc	cct	gcc	cgc	tca	gct	acc	ccc	aaa	gtt	cga	ctt	gta	gag	ccc	cat	501
Ser	Pro	Ala	Arg	Ser	Ala	Thr	Pro	Lys	Val	Arg	Leu	Val	Glu	Pro	His	
113					118					123					128	
agc	cct	tct	cct	tca	agc	aaa	ttc	agc	aca	aaa	ggc	ctc	tgt	aag	aaa	549
Ser	Pro	Ser	Pro	Ser	Ser	Lys	Phe	Ser	Thr	Lys	Gly	Leu	Cys	Lys	Lys	
129					134					139					144	
aag	ttg	agt	ggg	gaa	ggg	gac	aca	gac	ctt	ggg	gcc	tta	tcc	aat	gat	597
Lys	Leu	Ser	Gly	Glu	Gly	Asp	Thr	Asp	Leu	Gly	Ala	Leu	Ser	Asn	Asp	
145					150					155					160	
ggc	tct	gat	gat	gga	ccc	tca	gtg	atg	gat	gaa	aca	agc	aat	gat	gcc	645
Gly	Ser	Asp	Asp	Gly	Pro	Ser	Val	Met	Asp	Glu	Thr	Ser	Asn	Asp	Ala	
161					166					171					176	
ttt	gat	tct	tta	gaa	agg	aag	tgt	atg	gaa	aaa	gaa	aaa	tgt	aaa	aaa	693
Phe	Asp	Ser	Leu	Glu	Arg	Lys	Cys	Met	Glu	Lys	Glu	Lys	Cys	Lys	Lys	
177					182					187					192	
ccc	tct	agt	tta	aaa	cct	gaa	aag	att	cct	tcc	aag	agc	cta	aag	tca	741
Pro	Ser	Ser	Leu	Lys	Pro	Glu	Lys	Ile	Pro	Ser	Lys	Ser	Leu	Lys	Ser	
193					198					203					208	
gcc	cgt	ccc	att	gcc	cct	gcc	atc	ccc	cca	cag	caa	atc	tac	acc	ttc	789
Ala	Arg	Pro	Ile	Ala	Pro	Ala	Ile	Pro	Pro	Gln	Gln	Ile	Tyr	Thr	Phe	
209					214					219					224	
cag	aca	gcc	acc	ttc	aca	gca	gcg	agc	cca	ggc	tct	tcc	tca	ggc	ttg	837
Gln	Thr	Ala	Thr	Phe	Thr	Ala	Ala	Ser	Pro	Gly	Ser	Ser	Ser	Gly	Leu	
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Asp Asn Ala Pro Ser Pro Ser Ile Gly Gly Ser Ser Arg Leu Glu Asn				
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Phe Pro Pro Gln Pro Gln Ser Lys Asp Ser Pro Tyr Tyr Gln Gly Phe				
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gca aat tat att gcc aga gac aca cgt cgc ctt ggc gca aca ata cta	840
Ala Asn Tyr Ile Ala Arg Asp Thr Arg Arg Leu Gly Ala Thr Ile Leu	
62 67 72 77	
gac cgt ata cat agt ctt caa att aat agc agt ttg agc acc tac tct	888
Asp Arg Ile His Ser Leu Gln Ile Asn Ser Ser Leu Ser Thr Tyr Ser	
78 83 88 93	
ctc gta gac tct gtt gga aat aca aag aca ttt gat gta gaa cat tct	936
Leu Val Asp Ser Val Gly Asn Thr Lys Thr Phe Asp Val Glu His Ser	
94 99 104 109	
cat gtt cga ttt ctg gga aac ctg gta ttg aac ctg tgg gat tgt ggt	984
His Val Arg Phe Leu Gly Asn Leu Val Leu Asn Leu Trp Asp Cys Gly	
110 115 120 125	
ggg caa gac acc ttc atg gaa aat tat ttc act agc caa cgg gac aac	1032
Gly Gln Asp Thr Phe Met Glu Asn Tyr Phe Thr Ser Gln Arg Asp Asn	
126 131 136 141	
atc ttc cga aat gtg gag gtt ctg att tat gtc ttt gat gtg gag agc	1080
Ile Phe Arg Asn Val Glu Val Leu Ile Tyr Val Phe Asp Val Glu Ser	
142 147 152 157	
cgc gaa ctg gaa aag gac atg cac tat tac caa tca tgc ctg gag gcc	1128
Arg Glu Leu Glu Lys Asp Met His Tyr Tyr Gln Ser Cys Leu Glu Ala	
158 163 168 173	
att ctg cag aat tct cca gat gcc aaa ata ttt tgc ttg gta cac aaa	1176
Ile Leu Gln Asn Ser Pro Asp Ala Lys Ile Phe Cys Leu Val His Lys	
174 179 184 189	
atg gat ctg gta cag gag gat caa cgg gac ctg att ttt aaa gag cga	1224
Met Asp Leu Val Gln Glu Asp Gln Arg Asp Leu Ile Phe Lys Glu Arg	
190 195 200 205	
gaa gaa gat ttg agg cgt ttg tct cgc cca ttg gaa tgt tct tgt ttc	1272
Glu Glu Asp Leu Arg Arg Leu Ser Arg Pro Leu Glu Cys Ser Cys Phe	
206 211 216 221	
cga aca tct atc tgg gat gaa acc ctc tat aag gct tgg tcc agc ata	1320
Arg Thr Ser Ile Trp Asp Glu Thr Leu Tyr Lys Ala Trp Ser Ser Ile	
222 227 232 237	
gtt tat cag ctg att ccc aat gtt cag cag ctg gaa atg aac cta agg	1368
Val Tyr Gln Leu Ile Pro Asn Val Gln Gln Leu Glu Met Asn Leu Arg	
238 243 248 253	
aat ttt gct gaa att atc gaa gct gat gaa gta ctt ctt ttt gag aga	1416

Asn Phe Ala Glu Ile Ile Glu Ala Asp Glu Val Leu Leu Phe Glu Arg	
254 259 264 269	
gct act ttt ctg gta att tct cac tat cag tgt aaa gag cag cgt gat	1464
Ala Thr Phe Leu Val Ile Ser His Tyr Gln Cys Lys Glu Gln Arg Asp	
270 275 280 285	
gcc cat aga ttt gag aaa ata agc aac att att aag cag ttc aag ctg	1512
Ala His Arg Phe Glu Lys Ile Ser Asn Ile Ile Lys Gln Phe Lys Leu	
286 291 296 301	
agc tgc agc aag ctg gct gcc tct ttc cag agt atg gaa gtc agg aac	1560
Ser Cys Ser Lys Leu Ala Ala Ser Phe Gln Ser Met Glu Val Arg Asn	
302 307 312 317	
tct aac ttc gct gct ttc att gac atc ttt aca tcc aac act tat gtg	1608
Ser Asn Phe Ala Ala Phe Ile Asp Ile Phe Thr Ser Asn Thr Tyr Val	
318 323 328 333	
atg gtt gtg atg tct gat ccg tcc att cct tct gca gct act ctg atc	1656
Met Val Val Met Ser Asp Pro Ser Ile Pro Ser Ala Ala Thr Leu Ile	
334 339 344 349	
aac atc cgc aat gcc agg aaa cac ttt gaa aag ctg gaa aga gtg gat	1704
Asn Ile Arg Asn Ala Arg Lys His Phe Glu Lys Leu Glu Arg Val Asp	
350 355 360 365	
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Gly Pro Lys Gln Cys Leu Leu Met Arg *	
366 371	
cacaaaaatt aaaagtttcc taattaatgt tgtattcata tatgtaggct ctgaaatggt	1815
gtgatgctta ttgcttctgt atttcttctc tactccctag tcttaatggt taaccttgaa	1875
tgctattaac ttaaatagcc attgaggagt tagaagatga attgttcattg aagtcgggtgt	1935
tacataaaaag taggtgatat gtaagttttc tgataacaag gttctaatag tgtttaaatg	1995
tactggtaac ctggtttccaa tagttgtgtt tgcccaagcc tttctcggca tcattcttgta	2055
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[illegible][illegible]



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142 147 152 157	
ttg gta cac aaa atg gat ctg gta cag gag gat caa cgg gac ctg att	1128
Leu Val His Lys Met Asp Leu Val Gln Glu Asp Gln Arg Asp Leu Ile	
158 163 168 173	
ttt aaa gag cga gaa gaa gat ttg agg cgt ttg tct cgc cca ttg gaa	1176
Phe Lys Glu Arg Glu Glu Asp Leu Arg Arg Leu Ser Arg Pro Leu Glu	
174 179 184 189	
tgt tct tgt ttc cga aca tct atc tgg gat gaa acc ctc tat aag gct	1224
Cys Ser Cys Phe Arg Thr Ser Ile Trp Asp Glu Thr Leu Tyr Lys Ala	
190 195 200 205	
tgg tcc agc ata gtt tat cag ctg att ccc aat gtt cag cag ctg gaa	1272
Trp Ser Ser Ile Val Tyr Gln Leu Ile Pro Asn Val Gln Gln Leu Glu	
206 211 216 221	
atg aac cta agg aat ttt gct gaa att atc gaa gct gat gaa gta ctt	1320
Met Asn Leu Arg Asn Phe Ala Glu Ile Ile Glu Ala Asp Glu Val Leu	
222 227 232 237	
ctt ttt gag aga gct act ttt ctg gta att tct cac tat cag tgt aaa	1368
Leu Phe Glu Arg Ala Thr Phe Leu Val Ile Ser His Tyr Gln Cys Lys	
238 243 248 253	
gag cag cgt gat gcc cat aga ttt gag aaa ata agc aac att att aag	1416
Glu Gln Arg Asp Ala His Arg Phe Glu Lys Ile Ser Asn Ile Ile Lys	
254 259 264 269	
cag ttc aag ctg agc tgc agc aag ctg gct gcc tct ttc cag agt atg	1464
Gln Phe Lys Leu Ser Cys Ser Lys Leu Ala Ala Ser Phe Gln Ser Met	
270 275 280 285	
gaa gtc agg aac tct aac ttc gct gct ttc att gac atc ttt aca tcc	1512
Glu Val Arg Asn Ser Asn Phe Ala Ala Phe Ile Asp Ile Phe Thr Ser	
286 291 296 301	
aac act tat gtg atg gtt gtg atg tct gat ccg tcc att cct tct gca	1560
Asn Thr Tyr Val Met Val Val Met Ser Asp Pro Ser Ile Pro Ser Ala	
302 307 312 317	
gct act ctg atc aac atc cgc aat gcc agg aaa cac ttt gaa aag ctg	1608
Ala Thr Leu Ile Asn Ile Arg Asn Ala Arg Lys His Phe Glu Lys Leu	
318 323 328 333	
gaa aga gtg gat gga cca aag cag tgt ctt ctc atg cgc taa acattga	1657
Glu Arg Val Asp Gly Pro Lys Gln Cys Leu Leu Met Arg *	
334 339 344	
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ggctctgaaa tgttgtgatg cttattgctt ctgtatttct tctctactcc ctagtcttaa	1777
tgtttaacct tgaatgctat taacttaaata agccattgag gagttagaag atgaattggt	1837

catgaagtcg gtgttacata aaagtaggtg atatgtaagt tttctgataa caaggttcta 1897  
 atagtgttta aatgtactgg taacctgggt ccaatagttg tgtttgccca agcctttctc 1957  
 ggcatcatct tgtattcctt atcagatagt aagtaacctg taagtttgga gtattactgt 2017  
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 ccccgccggc tgagtctccg agcggccggg ctcggaagcc acgagccagc tgaggcgctc 180  
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 cacggaatca cttggcctta aagctagcca gctcgccgt gccttgaggc caggttcgag 420  
 agataaaggt aaccgtgggg aaagcggccc ccagtgagc aaaggcggag gcaagaatag 480  
 agcaggcctg agggccatag gcgatgagaa taggcagttg aggggtgaaa aagaaaacaa 540  
 acaacaaca acaacaacc ctgaagagta ctgaagattt agaagggact ggaaaggact 600  
 tgttgcgca atg gaa gaa tct gac tct gag aaa acg acg gag aaa gaa 648  
           Met Glu Glu Ser Asp Ser Glu Lys Thr Thr Glu Lys Glu  
           1                  5                  10  
 aat ctg ggg ccg aga atg gat cca cca cta ggg gaa ccg gaa gga tcg 696  
 Asn Leu Gly Pro Arg Met Asp Pro Pro Leu Gly Glu Pro Glu Gly Ser  
 14                  19                  24                  29  
 ctt ggg tgg gtg cta cca aat aca gcc atg aag aaa aag gta aga cgt 744  
 Leu Gly Trp Val Leu Pro Asn Thr Ala Met Lys Lys Lys Val Arg Arg  
 30                  35                  40                  45  
 gtt aga tac gtc aaa acc atg aag aaa aag gtg ctg ttg atg ggt aaa 792  
 Val Arg Tyr Val Lys Thr Met Lys Lys Lys Val Leu Leu Met Gly Lys  
 46                  51                  56                  61

agt ggg tct ggt aag acc agc atg agg tct att atc ttt gca aat tat	840
Ser Gly Ser Gly Lys Thr Ser Met Arg Ser Ile Ile Phe Ala Asn Tyr	
62 67 72 77	
att gcc aga gac aca cgt cgc ctt ggc gca aca att gat gta gaa cat	888
Ile Ala Arg Asp Thr Arg Arg Leu Gly Ala Thr Ile Asp Val Glu His	
78 83 88 93	
tct cat gtt cga ttt ctg gga aac ctg gta ttg aac ctg tgg gat tgt	936
Ser His Val Arg Phe Leu Gly Asn Leu Val Leu Asn Leu Trp Asp Cys	
94 99 104 109	
ggg ggg caa gac acc ttc atg gaa aat tat ttc act agc caa cgg gac	984
Gly Gly Gln Asp Thr Phe Met Glu Asn Tyr Phe Thr Ser Gln Arg Asp	
110 115 120 125	
aac atc ttc cga aat gtg gag gtt ctg att tat gtc ttt gat gtg gag	1032
Asn Ile Phe Arg Asn Val Glu Val Leu Ile Tyr Val Phe Asp Val Glu	
126 131 136 141	
agc cgc gaa ctg gaa aag gac atg cac tat tac caa tca tgc ctg gag	1080
Ser Arg Glu Leu Glu Lys Asp Met His Tyr Tyr Gln Ser Cys Leu Glu	
142 147 152 157	
gcc att ctg cag aat tct cca gat gcc aaa ata ttt tgc ttg gta cac	1128
Ala Ile Leu Gln Asn Ser Pro Asp Ala Lys Ile Phe Cys Leu Val His	
158 163 168 173	
aaa atg gat ctg gta cag gag gat caa cgg gac ctg att ttt aaa gag	1176
Lys Met Asp Leu Val Gln Glu Asp Gln Arg Asp Leu Ile Phe Lys Glu	
174 179 184 189	
cga gaa gaa gat ttg agg cgt ttg tct cgc cca ttg gaa tgt tct tgt	1224
Arg Glu Glu Asp Leu Arg Arg Leu Ser Arg Pro Leu Glu Cys Ser Cys	
190 195 200 205	
ttc cga aca tct atc tgg gat gaa acc ctc tat aag gct tgg tcc agc	1272
Phe Arg Thr Ser Ile Trp Asp Glu Thr Leu Tyr Lys Ala Trp Ser Ser	
206 211 216 221	
ata gtt tat cag ctg att ccc aat gtt cag cag ctg gaa atg aac cta	1320
Ile Val Tyr Gln Leu Ile Pro Asn Val Gln Gln Leu Glu Met Asn Leu	
222 227 232 237	
agg aat ttt gct gaa att atc gaa gct gat gaa gta ctt ctt ttt gag	1368
Arg Asn Phe Ala Glu Ile Ile Glu Ala Asp Glu Val Leu Leu Phe Glu	
238 243 248 253	
aga gct act ttt ctg gta att tct cac tat cag tgt aaa gag cag cgt	1416
Arg Ala Thr Phe Leu Val Ile Ser His Tyr Gln Cys Lys Glu Gln Arg	
254 259 264 269	
gat gcc cat aga ttt gag aaa ata agc aac att att aag cag ttc aag	1464
Asp Ala His Arg Phe Glu Lys Ile Ser Asn Ile Ile Lys Gln Phe Lys	
270 275 280 285	

ctg agc tgc agc aag ctg gct gcc tct ttc cag agt atg gaa gtc agg	1512
Leu Ser Cys Ser Lys Leu Ala Ala Ser Phe Gln Ser Met Glu Val Arg	
286 291 296 301	
aac tct aac ttc gct gct ttc att gac atc ttt aca tcc aac act tat	1560
Asn Ser Asn Phe Ala Ala Phe Ile Asp Ile Phe Thr Ser Asn Thr Tyr	
302 307 312 317	
gtg atg gtt gtg atg tct gat ccg tcc att cct tct gca gct act ctg	1608
Val Met Val Val Met Ser Asp Pro Ser Ile Pro Ser Ala Ala Thr Leu	
318 323 328 333	
atc aac atc cgc aat gcc agg aaa cac ttt gaa aag ctg gaa aga gtg	1656
Ile Asn Ile Arg Asn Ala Arg Lys His Phe Glu Lys Leu Glu Arg Val	
334 339 344 349	
gat gga cca aag cag tgt ctt ctc atg cgc taa acattgat gaatattgtt	1707
Asp Gly Pro Lys Gln Cys Leu Leu Met Arg *	
350 355 360	
tcacacaaaa attaaaagtt tcctaattaa tgttgtattc atatatgtag gctctgaaat	1767
gttgtgatgc ttattgcttc tgtatttctt ctctactccc tagtcttaat gtttaacott	1827
gaatgctatt aacttaaata gccattgagg agttagaaga tgaattgttc atgaagtcgg	1887
tggtacataa aagtaggtga tatgtaagtt ttctgataac aaggttctaa tagtgtttaa	1947
atgtactggt aacctggttc caatagttgt gtttgcccaa gcctttctcg gcatcatctt	2007
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 <212> DNA  
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gcggccatag agaatgaact gcacgagtcg ctccaactcc tgcagagctg agccggaggg	180
aatccggaag gacacgctga acaggaacag aa atg aat aaa agt cgc tgg cag	233
Met Asn Lys Ser Arg Trp Gln	
1 5	

agt aga aga cga cat ggg aga aga agc cac cag cag aac cct tgg ttc	281
Ser Arg Arg Arg His Gly Arg Arg Ser His Gln Gln Asn Pro Trp Phe	
8 13 18 23	
aga ctc cgt gat tct gaa gac agg tct gac tcc cgg gca gca cag ccc	329
Arg Leu Arg Asp Ser Glu Asp Arg Ser Asp Ser Arg Ala Ala Gln Pro	
24 29 34 39	
gct cac gat tcc ggc cac ggt gat gac gag tct ccg tca acc tcg tct	377
Ala His Asp Ser Gly His Gly Asp Asp Glu Ser Pro Ser Thr Ser Ser	
40 45 50 55	
ggc aca gct ggg acc tcc tct gtg cca gag cta cct ggg ttt tac ttt	425
Gly Thr Ala Gly Thr Ser Ser Val Pro Glu Leu Pro Gly Phe Tyr Phe	
56 61 66 71	
gac cct gaa aag aaa cgc tac ttc cgc ttg ctc cct gga cat aac aac	473
Asp Pro Glu Lys Lys Arg Tyr Phe Arg Leu Leu Pro Gly His Asn Asn	
72 77 82 87	
tgc aac ccc ctg acg aaa gag agc atc cgg cag aag gag atg gag agc	521
Cys Asn Pro Leu Thr Lys Glu Ser Ile Arg Gln Lys Glu Met Glu Ser	
88 93 98 103	
aag aga ctg cgg ctg ctc cag gaa gaa gac aga cgg aaa aag att gcc	569
Lys Arg Leu Arg Leu Leu Gln Glu Glu Asp Arg Arg Lys Lys Ile Ala	
104 109 114 119	
agg atg gga ttt aat gca tct tcc atg cta cga aaa agc cag ctg ggt	617
Arg Met Gly Phe Asn Ala Ser Ser Met Leu Arg Lys Ser Gln Leu Gly	
120 125 130 135	
ttt ctc aac gtc acc aat tac tgc cat tta gcc cac gag ctg cgt ctc	665
Phe Leu Asn Val Thr Asn Tyr Cys His Leu Ala His Glu Leu Arg Leu	
136 141 146 151	
agc tgc atg gag agg aaa aag gtc cag att cga agc atg gat ccc tcc	713
Ser Cys Met Glu Arg Lys Lys Val Gln Ile Arg Ser Met Asp Pro Ser	
152 157 162 167	
gcc ttg gca agc gac cga ttt aac ctc ata ctg gca gat acc aac agt	761
Ala Leu Ala Ser Asp Arg Phe Asn Leu Ile Leu Ala Asp Thr Asn Ser	
168 173 178 183	
gac cgg ctc ttc aca gtg aac gat gtt aca gtt gga ggc tcc aag tat	809
Asp Arg Leu Phe Thr Val Asn Asp Val Thr Val Gly Gly Ser Lys Tyr	
184 189 194 199	
ggc atc atc aac ctg caa agt ctg aag acc cct acg ctc aag gtg ttc	857
Gly Ile Ile Asn Leu Gln Ser Leu Lys Thr Pro Thr Leu Lys Val Phe	
200 205 210 215	
atg cac gaa aac ctc tac ttc acc aac cgg aag gtg aga ttc ggt gtg	905
Met His Glu Asn Leu Tyr Phe Thr Asn Arg Lys Val Arg Phe Gly Val	
216 221 226 231	
ctg ggc ctc gct gaa tca ctt gga ttc cca cat tct gct atg cct cat	953

Leu Gly Leu Ala Glu Ser Leu Gly Phe Pro His Ser Ala Met Pro His	
232 237 242 247	
ggg act cgc agg act cca ggc tgt gcc acc ctg ctc cca gca tca ctg	1001
Gly Thr Arg Arg Thr Pro Gly Cys Ala Thr Leu Leu Pro Ala Ser Leu	
248 253 258 263	
ttc gtc aat agt cac cca gca gga ata gac cgg cct ggc atg ctc tgc	1049
Phe Val Asn Ser His Pro Ala Gly Ile Asp Arg Pro Gly Met Leu Cys	
264 269 274 279	
agt ttc cgg atc cct ggt gcc tgg tcc tgt gcc tgg tcc ctg aat atc	1097
Ser Phe Arg Ile Pro Gly Ala Trp Ser Cys Ala Trp Ser Leu Asn Ile	
280 285 290 295	
caa gca aat aac tgc ttc agt aca ggc ttg tct cgg cgg gtc ctg ttg	1145
Gln Ala Asn Asn Cys Phe Ser Thr Gly Leu Ser Arg Arg Val Leu Leu	
296 301 306 311	
acc aac gtg gtg acg gga cac cgg cag tcc ttt ggg acc aac agt gat	1193
Thr Asn Val Val Thr Gly His Arg Gln Ser Phe Gly Thr Asn Ser Asp	
312 317 322 327	
gtc ttg gcc cag cag ttt gct ctc atg gct cct ctg ctg ttt aat ggc	1241
Val Leu Ala Gln Gln Phe Ala Leu Met Ala Pro Leu Leu Phe Asn Gly	
328 333 338 343	
tgc cgc tct ggg gaa atc ttt gcc att gat ctg cgt tgt gga aat caa	1289
Cys Arg Ser Gly Glu Ile Phe Ala Ile Asp Leu Arg Cys Gly Asn Gln	
344 349 354 359	
ggc aag gga tgg aag gcc acc cgc ctg ttt cat gat tca gca gtg acc	1337
Gly Lys Gly Trp Lys Ala Thr Arg Leu Phe His Asp Ser Ala Val Thr	
360 365 370 375	
tct gtg cgg atc ctc caa gat gag caa tac ctg atg gct tca gac atg	1385
Ser Val Arg Ile Leu Gln Asp Glu Gln Tyr Leu Met Ala Ser Asp Met	
376 381 386 391	
gct gga aag atc aag ctg tgg gac ctg agg acc acg aag tgc gta agg	1433
Ala Gly Lys Ile Lys Leu Trp Asp Leu Arg Thr Thr Lys Cys Val Arg	
392 397 402 407	
cag tac gaa ggc cac gtg aat gag tac gcc tac ctg ccc ctg cat gtg	1481
Gln Tyr Glu Gly His Val Asn Glu Tyr Ala Tyr Leu Pro Leu His Val	
408 413 418 423	
cac gag gaa gaa gga atc ctg gtg gca gtg ggc cag gac tgc tac acg	1529
His Glu Glu Glu Gly Ile Leu Val Ala Val Gly Gln Asp Cys Tyr Thr	
424 429 434 439	
aga atc tgg agc ctc cac gat gcc cgc cta ctg aga acc ata ccc tcc	1577
Arg Ile Trp Ser Leu His Asp Ala Arg Leu Leu Arg Thr Ile Pro Ser	
440 445 450 455	
ccg tac cct gcc tcc aag gcc gac att ccc agt gtg gcc ttc tcg tcg	1625
Pro Tyr Pro Ala Ser Lys Ala Asp Ile Pro Ser Val Ala Phe Ser Ser	

456	461	466	471	
cgg ctg ggg ggc tcc cgg ggc gcg ccg ggg ctg ctc atg gct gtc ggg				1673
Arg Leu Gly Gly Ser Arg Gly Ala Pro Gly Leu Leu Met Ala Val Gly				
472	477	482	487	
cag gac ctt tac tgt tac tcc tac agc taa t tctgcagggc acagcccaga				1724
Gln Asp Leu Tyr Cys Tyr Ser Tyr Ser *				
488	493			
gccatgtgga tttgacttac gggagtaaag cgtaactttt tactgcatct aatgaggggtg				1784
ttttaagtga cactcagtgt acacagatcc catcctctgg ctgctaggag agaagtgctg				1844
aatgttccgt gtggagatgc tcaggaaagt tatttgagtt aaattgctgg ctgagagagc				1904
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gttaaccctc cctgcctttt cttaacaaaa aggacttttc taaggactga agattggcaa				2024
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His Leu Leu Val Arg Arg Gly Ser His Arg Ile Phe Ser Ser Pro Leu	

8	13	18	23	
aat cat atc tac tta cac aag cag tca agc agt caa caa aga aga aat				149
Asn His Ile Tyr Leu His Lys Gln Ser Ser Ser Gln Gln Arg Arg Asn				
24	29	34	39	
ttc ttt ttt cgg aga caa aga gat att tca cac agt ata gtt ttg ccg				197
Phe Phe Phe Arg Arg Gln Arg Asp Ile Ser His Ser Ile Val Leu Pro				
40	45	50	55	
gct gca gtt tct tca gct cat ccg gtt cct aag cac ata aag aag cca				245
Ala Ala Val Ser Ser Ala His Pro Val Pro Lys His Ile Lys Lys Pro				
56	61	66	71	
gac tat gtg acg aca ggc att gta cca gac tgg gga gac agc ata gaa				293
Asp Tyr Val Thr Thr Gly Ile Val Pro Asp Trp Gly Asp Ser Ile Glu				
72	77	82	87	
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Pro Leu Gln Asp Gly Asp Ile Ile Asn Ile Asp Val Thr Val Tyr Tyr				
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Ser	Lys	Ser	Trp	Arg	His	Pro	Leu	Ser	Arg	Pro	Pro	Ala	Arg	Ser	Pro	
568					573					578					583	
atg	act	ctt	gtg	aag	cag	cag	gcg	cca	agt	gat	gaa	gaa	ttg	cct	gag	2010
Met	Thr	Leu	Val	Lys	Gln	Gln	Ala	Pro	Ser	Asp	Glu	Glu	Leu	Pro	Glu	
584					589					594					599	
gtt	ctg	tcc	att	gag	gag	gaa	gtg	gaa	gaa	aca	gag	tct	tgg	gcg	aaa	2058
Val	Leu	Ser	Ile	Glu	Glu	Glu	Val	Glu	Glu	Thr	Glu	Ser	Trp	Ala	Lys	
600					605					610					615	
cct	ctc	atc	cac	ctt	tgg	cag	acg	aag	tcc	cct	aac	ttc	gca	gct	gag	2106
Pro	Leu	Ile	His	Leu	Trp	Gln	Thr	Lys	Ser	Pro	Asn	Phe	Ala	Ala	Glu	
616					621					626					631	
caa	gag	tat	aat	gca	aca	gtg	gcc	agg	atg	aag	cca	cac	tgt	gcc	atc	2154
Gln	Glu	Tyr	Asn	Ala	Thr	Val	Ala	Arg	Met	Lys	Pro	His	Cys	Ala	Ile	
632					637					642					647	
tgc	act	ctg	ctc	atg	ccg	tac	cac	aag	cca	gat	agc	agc	aat	gaa	gaa	2202
Cys	Thr	Leu	Leu	Met	Pro	Tyr	His	Lys	Pro	Asp	Ser	Ser	Asn	Glu	Glu	
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aat	gat	gct	aga	tgg	gag	aca	aaa	tta	gat	gaa	gtc	gtt	aca	tcg	gag	2250
Asn	Asp	Ala	Arg	Trp	Glu	Thr	Lys	Leu	Asp	Glu	Val	Val	Thr	Ser	Glu	
664					669					674					679	
gga	aag	act	aag	ccc	ctc	ata	cca	gag	atg	tgt	ttt	att	tat	agt	gaa	2298
Gly	Lys	Thr	Lys	Pro	Leu	Ile	Pro	Glu	Met	Cys	Phe	Ile	Tyr	Ser	Glu	
680					685					690					695	
gaa	aat	ata	gaa	tat	tct	cca	ccc	aat	gcc	ttc	ctt	gaa	gag	gat	gga	2346
Glu	Asn	Ile	Glu	Tyr	Ser	Pro	Pro	Asn	Ala	Phe	Leu	Glu	Glu	Asp	Gly	
696					701					706					711	
aca	agt	ctc	ctt	att	tcc	tgt	gca	aag	tgc	tgc	gta	cgg	gtt	cat	gca	2394
Thr	Ser	Leu	Leu	Ile	Ser	Cys	Ala	Lys	Cys	Cys	Val	Arg	Val	His	Ala	
712					717					722					727	
agt	tgt	tat	ggt	att	cct	tct	cat	gag	atc	tgt	gat	gga	tgg	ctg	tgt	2442
Ser	Cys	Tyr	Gly	Ile	Pro	Ser	His	Glu	Ile	Cys	Asp	Gly	Trp	Leu	Cys	
728					733					738					743	
gcc	cgg	tgc	aaa	aga	aat	gcg	tgg	aca	gca	gaa	tgc	tgt	ctc	tgc	aat	2490
Ala	Arg	Cys	Lys	Arg	Asn	Ala	Trp	Thr	Ala	Glu	Cys	Cys	Leu	Cys	Asn	
744					749					754					759	
ttg	aga	gga	ggt	gct	ctt	aag	caa	acg	aag	aac	aat	aag	tgg	gcc	cat	2538
Leu	Arg	Gly	Gly	Ala	Leu	Lys	Gln	Thr	Lys	Asn	Asn	Lys	Trp	Ala	His	
760					765					770					775	
gtc	atg	tgc	gcc	gtt	gcg	gtc	cca	gaa	gtt	cga	ttc	act	aat	gtc	cca	2586
Val	Met	Cys	Ala	Val	Ala	Val	Pro	Glu	Val	Arg	Phe	Thr	Asn	Val	Pro	

776	781	786	791	
gaa agg aca caa ata gat gta ggc aga ata cct tta cag agg tta aaa				2634
Glu Arg Thr Gln Ile Asp Val Gly Arg Ile Pro Leu Gln Arg Leu Lys				
792	797	802	807	
ttg aaa tgc atc ttc tgc aga cac cgg gtt aag agg gtc tct gga gcc				2682
Leu Lys Cys Ile Phe Cys Arg His Arg Val Lys Arg Val Ser Gly Ala				
808	813	818	823	
tgc atc cag tgt tcc tac ggt cgc tgc ccg gcc tcc ttc cat gtc act				2730
Cys Ile Gln Cys Ser Tyr Gly Arg Cys Pro Ala Ser Phe His Val Thr				
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tgt gcc cat gct gct ggg gta ctg atg gag cct gat gat tgg cct tat				2778
Cys Ala His Ala Ala Gly Val Leu Met Glu Pro Asp Asp Trp Pro Tyr				
840	845	850	855	
gtg gtg aac att aca tgc ttt cga cat aag gtc aac ccc aac gtg aag				2826
Val Val Asn Ile Thr Cys Phe Arg His Lys Val Asn Pro Asn Val Lys				
856	861	866	871	
tcc aag gct tgc gag aag gtc att tcc gtg ggt caa acg gtc atc acg				2874
Ser Lys Ala Cys Glu Lys Val Ile Ser Val Gly Gln Thr Val Ile Thr				
872	877	882	887	
aag cat cgg aac acc cgg tat tac agt tgc aga gtg atg gct gtg aca				2922
Lys His Arg Asn Thr Arg Tyr Tyr Ser Cys Arg Val Met Ala Val Thr				
888	893	898	903	
tcg cag acc ttc tat gag gtc atg ttt gat gat ggc tcc ttt agc aga				2970
Ser Gln Thr Phe Tyr Glu Val Met Phe Asp Asp Gly Ser Phe Ser Arg				
904	909	914	919	
gac aca ttt cct gag gat atc gtg agc cga gac tgt ctg aag ctg ggc				3018
Asp Thr Phe Pro Glu Asp Ile Val Ser Arg Asp Cys Leu Lys Leu Gly				
920	925	930	935	
cca cct gct gag gga gaa gtc gtc caa gtc aag tgg ccc gat ggc aaa				3066
Pro Pro Ala Glu Gly Glu Val Val Gln Val Lys Trp Pro Asp Gly Lys				
936	941	946	951	
ctc tat gga gca aaa tat ttt gga tca aat att gcc cac atg tac cag				3114
Leu Tyr Gly Ala Lys Tyr Phe Gly Ser Asn Ile Ala His Met Tyr Gln				
952	957	962	967	
gtt gag ttt gaa gat gga tcc cag ata gca atg aag aga gag gac atc				3162
Val Glu Phe Glu Asp Gly Ser Gln Ile Ala Met Lys Arg Glu Asp Ile				
968	973	978	983	
tac act tta gat gaa gag tta ccc aag aga gtg aaa gct cga ttt gta				3210
Tyr Thr Leu Asp Glu Glu Leu Pro Lys Arg Val Lys Ala Arg Phe Val				
984	989	994	999	
agt gct ggc aga tgc cac ttg ggg acc tgc caa gtg aat tcc ttg tcc				3258
Ser Ala Gly Arg Cys His Leu Gly Thr Cys Gln Val Asn Ser Leu Ser				
1000	1005	1010	1015	



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Met Gln Leu Thr Arg Cys Cys Phe Val Phe Leu Val Gln Gly Ser Leu	
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tat ctg gtc atc tgt ggc cag gat gat ggt cct ccc ggc tca gag gac	216
Tyr Leu Val Ile Cys Gly Gln Asp Asp Gly Pro Pro Gly Ser Glu Asp	
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cct gag cgt gat gac cac gag ggc cag ccc cgg ccc cgg gtg cct cgg	264
Pro Glu Arg Asp Asp His Glu Gly Gln Pro Arg Pro Arg Val Pro Arg	
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aag cgg ggc cac atc tca cct aag tcc cgc ccc atg gcc aat tcc act	312
Lys Arg Gly His Ile Ser Pro Lys Ser Arg Pro Met Ala Asn Ser Thr	
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Leu Leu Gly Leu Leu Ala Pro Pro Gly Glu Ala Trp Gly Ile Leu Gly	
65 70 75 80	
cag ccc ccc aac cgc ccg aac cac agc ccc cca ccc tca gcc aag gtg	408
Gln Pro Pro Asn Arg Pro Asn His Ser Pro Pro Pro Ser Ala Lys Val	
81 86 91 96	
aag aaa atc ttt ggc tgg ggc gac ttc tac tcc aac atc aag acg gtg	456
Lys Lys Ile Phe Gly Trp Gly Asp Phe Tyr Ser Asn Ile Lys Thr Val	
97 102 107 112	
gcc ctg aac ctg ctc gtc aca ggg aag att gtg gac cat ggc aat ggg	504
Ala Leu Asn Leu Leu Val Thr Gly Lys Ile Val Asp His Gly Asn Gly	
113 118 123 128	
acc ttc agc gtc cac ttc caa cac aat gcc aca ggc cag gga aac atc	552
Thr Phe Ser Val His Phe Gln His Asn Ala Thr Gly Gln Gly Asn Ile	
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tcc atc agc ctc gtg ccc ccc agt aaa gct gta gag ttc cac cag gaa	600
Ser Ile Ser Leu Val Pro Pro Ser Lys Ala Val Glu Phe His Gln Glu	
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Gln Gln Ile Phe Ile Glu Ala Lys Ala Ser Lys Ile Phe Asn Cys Arg	
161 166 171 176	
atg gag tgg gag aag gta gaa cgg ggc cgc cgg acc tcg ctt tgc acc	696
Met Glu Trp Glu Lys Val Glu Arg Gly Arg Arg Thr Ser Leu Cys Thr	
177 182 187 192	
cac gac cca gcc aag atc tgc tcc cga gac cac gct cag agc tca gcc	744
His Asp Pro Ala Lys Ile Cys Ser Arg Asp His Ala Gln Ser Ser Ala	
193 198 203 208	
acc tgg agc tgc tcc cag ccc ttc aaa gtc gtc tgt gtc tac atc gcc	792
Thr Trp Ser Cys Ser Gln Pro Phe Lys Val Val Cys Val Tyr Ile Ala	
209 214 219 224	





Leu Pro His Phe Gly Glu His Ser Ser Arg Val Val Gln Glu Leu Leu	
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Glu His Gly Val Cys Glu Glu Val Glu Arg Val Arg Arg Ser Glu Arg	
218 223 228 233	
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Tyr Gln Thr Met Lys Leu Phe Thr Gln Ile Phe Gly Val Gly Val Lys	
234 239 244 249	
act gct gac cgg tgg tac cgg gaa gga ctg cga acc tta gat gac ctc	940
Thr Ala Asp Arg Trp Tyr Arg Glu Gly Leu Arg Thr Leu Asp Asp Leu	
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Arg Glu Gln Pro Gln Lys Leu Thr Gln Gln Gln Lys Ala Gly Glu Pro	
266 271 276 281	
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Ser Arg Glu Ala Gly Pro Trp Ala Ser Leu Asn Cys Thr Leu Asp Pro	
282 287 292 297	
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Ser Ala Ser Thr Pro *	
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Glu Ser Leu Ala Asp Leu Thr Asp His Arg Ala His Arg Cys Pro Gly	
17 22 27 32	
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Asp Gly Asp Asp Asp Pro Gln Leu Ser Trp Val Ala Ser Ser Pro Ser	
33 38 43 48	
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Ser Lys Asp Val Ala Ser Pro Thr Gln Met Ile Gly Asp Gly Cys Asp	
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Leu Gly Leu Gly Glu Glu Glu Gly Gly Thr Gly Leu Pro Tyr Pro Cys	
65 70 75 80	
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Gln Phe Cys Asp Lys Ser Phe Ile Arg Leu Ser Tyr Leu Lys Arg His	
81 86 91 96	
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Glu Gln Ile His Ser Asp Lys Leu Pro Phe Lys Cys Thr Tyr Cys Ser	
97 102 107 112	
cgc ctc ttc aag cac aag agg agc cgt gac cgg cac atc aag ctg cat	384
Arg Leu Phe Lys His Lys Arg Ser Arg Asp Arg His Ile Lys Leu His	
113 118 123 128	
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Thr Gly Asp Lys Lys Tyr His Cys His Glu Cys Glu Ala Ala Phe Ser	
129 134 139 144	
cgc agc gac cac ctc aag atc cac ctg aag acc cac agc tcc agc aag	480
Arg Ser Asp His Leu Lys Ile His Leu Lys Thr His Ser Ser Ser Lys	
145 150 155 160	
ccc ttc aag tgc act gtg tgc aag cgc ggc ttc tcc tcc acc agc tcg	528
Pro Phe Lys Cys Thr Val Cys Lys Arg Gly Phe Ser Ser Thr Ser Ser	
161 166 171 176	
ctg cag agc cac atg cag gcc cac aaa aag aac aag gag cat ctg gcc	576
Leu Gln Ser His Met Gln Ala His Lys Lys Asn Lys Glu His Leu Ala	
177 182 187 192	
aag tcg gag aag gaa gcc aag aag gac gac ttc atg tgc gac tac tgc	624
Lys Ser Glu Lys Glu Ala Lys Lys Asp Asp Phe Met Cys Asp Tyr Cys	



193	198	203	208	
gag gac acc ttc agc	cag acg gag gag ctg	gag aag cac gtg ctc acc		672
Glu Asp Thr Phe Ser	Gln Thr Glu Glu Leu	Glu Lys His Val Leu Thr		
209	214	219	224	
cgc cac ccg cag ctg	tcc gag aag gcg gac	ctg cag tgc att cac tgc		720
Arg His Pro Gln Leu	Ser Glu Lys Ala Asp	Leu Gln Cys Ile His Cys		
225	230	235	240	
cct gag gtc ttc gtc	gac gag aac aca ctg	ctc gcc cat atc cac caa		768
Pro Glu Val Phe Val	Asp Glu Asn Thr Leu	Leu Ala His Ile His Gln		
241	246	251	256	
gcc cac gcc aac cag	aaa cac aag tgc ccc	atg tgc cct gag cag ttc		816
Ala His Ala Asn Gln	Lys His Lys Cys Pro	Met Cys Pro Glu Gln Phe		
257	262	267	272	
tcc tca gtg gaa ggt	gtc tac tgc cac ctg	gac agc cac cgg cag ccc		864
Ser Ser Val Glu Gly	Val Tyr Cys His Leu	Asp Ser His Arg Gln Pro		
273	278	283	288	
gac tcc agc aac cac	agt gtc agt ccc gac	cct gta ctg ggc agc gtg		912
Asp Ser Ser Asn His	Ser Val Ser Pro Asp	Pro Val Leu Gly Ser Val		
289	294	299	304	
gcc tcc atg agc agc	gcc aca ccc gac tcc	agc gcc tct gtg gag cgt		960
Ala Ser Met Ser Ser	Ala Thr Pro Asp Ser	Ser Ala Ser Val Glu Arg		
305	310	315	320	
ggc tcc acc ccg gac	tcc acc ttg aag ccg	ctg cgg ggg cag aag aag		1008
Gly Ser Thr Pro Asp	Ser Thr Leu Lys Pro	Leu Arg Gly Gln Lys Lys		
321	326	331	336	
atg cgg gat gac ggg	cag ggc tgg acc aag	gtg gtc tat agc tgc ccc		1056
Met Arg Asp Asp Gly	Gln Gly Trp Thr Lys	Val Val Tyr Ser Cys Pro		
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Tyr Cys Ser Lys Arg	Asp Phe Asn Ser Leu	Ala Val Leu Glu Ile His		
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Leu Lys Thr Ile His	Ala Asp Lys Pro Gln	Gln Ser His Thr Cys Gln		
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Ile Cys Leu Asp Ser	Met Pro Thr Leu Tyr	Asn Leu Asn Glu His Val		
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cgc aag ctg cac aag	aac cat gcc tac cct	gtg atg cag ttt ggc aac		1248
Arg Lys Leu His Lys	Asn His Ala Tyr Pro	Val Met Gln Phe Gly Asn		
401	406	411	416	
atc tct gcc ttc cac	tgc aac tac tgc ccc	gag atg ttc gcc gac atc		1296
Ile Ser Ala Phe His	Cys Asn Tyr Cys Pro	Glu Met Phe Ala Asp Ile		
417	422	427	432	

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Asn Ser Leu Gln Glu His Ile Arg Val Ser His Cys Gly Pro Asn Ala	
433 438 443 448	
aac ccc tct gac ggt aat aat gct ttc ttc tgc aac cag tgc tcc atg	1392
Asn Pro Ser Asp Gly Asn Asn Ala Phe Phe Cys Asn Gln Cys Ser Met	
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Gly Phe Leu Thr Glu Ser Ser Leu Thr Glu His Ile Gln Gln Ala His	
465 470 475 480	
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Cys Ser Val Gly Ser Ala Lys Leu Glu Ser Pro Val Val Gln Pro Thr	
481 486 491 496	
cag tcc ttc atg gag gtc tat tcc tgc ccc tac tgc acc aac tcc ccc	1536
Gln Ser Phe Met Glu Val Tyr Ser Cys Pro Tyr Cys Thr Asn Ser Pro	
497 502 507 512	
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Ile Phe Gly Ser Ile Leu Lys Leu Thr Lys His Ile Lys Glu Asn His	
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Lys Asn Ile Pro Leu Ala His Ser Lys Lys Ser Lys Ala Glu Gln Ser	
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Pro Val Ser Ser Asp Val Glu Val Ser Ser Pro Lys Arg Gln Arg Leu	
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Ser Ala Ser Ala Asn Ser Ile Ser Asn Gly Glu Tyr Pro Cys Asn Gln	
561 566 571 576	
tgc gac ctc aag ttc tcc aac ttt gag agc ttc cag acc cac ctg aag	1776
Cys Asp Leu Lys Phe Ser Asn Phe Glu Ser Phe Gln Thr His Leu Lys	
577 582 587 592	
ctg cac ctg gag ctg ctg ctg cgg aag caa gcg tgc ccc cag tgc aaa	1824
Leu His Leu Glu Leu Leu Leu Arg Lys Gln Ala Cys Pro Gln Cys Lys	
593 598 603 608	
gag gac ttt gac tcc cag gag tcc ctc ctg cag cac ctg aca gtg cat	1872
Glu Asp Phe Asp Ser Gln Glu Ser Leu Leu Gln His Leu Thr Val His	
609 614 619 624	
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Tyr Met Thr Thr Ser Thr His Tyr Val Cys Glu Ser Cys Asp Lys Gln	
625 630 635 640	
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Phe Ser Ser Val Asp Asp Leu Gln Lys His Leu Leu Asp Met His Thr	
641 646 651 656	

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Phe Val Leu Tyr His Cys Thr Leu Cys Gln Glu Val Phe Asp Ser Lys	
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Val Ser Ile Gln Val His Leu Ala Val Lys His Ser Asn Glu Lys Lys	
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Leu Gln Val His Val Lys His Ser His Leu Gly Asn Pro Ala Lys Ala	
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His Lys Cys Ile Phe Cys Gly Glu Thr Phe Ser Thr Glu Val Glu Leu	
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Gln Cys His Ile Thr Thr His Ser Lys Lys Tyr Asn Cys Lys Phe Cys	
737 742 747 752	
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Ser Lys Ala Phe His Ala Ile Ile Leu Leu Glu Lys His Leu Arg Glu	
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Lys His Cys Val Phe Asp Ala Ala Thr Glu Asn Gly Thr Ala Asn Gly	
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Met Leu Leu Lys Asn Pro Glu Ala Pro Asn Ser His Glu Ala Ser Glu	
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gcg gcc tac acc atg gag gtg ctg ctg cag aat cac cgg ctg cgg gac	2544
Ala Ala Tyr Thr Met Glu Val Leu Leu Gln Asn His Arg Leu Arg Asp	
833 838 843 848	
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His Asn Ile Arg Pro Gly Glu Asp Asp Gly Ser Arg Lys Lys Ala Glu	
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Phe Ile Lys Gly Ser His Lys Cys Asn Val Cys Ser Arg Thr Phe Phe	
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Ser	Glu	Asn	Gly	Leu	Arg	Glu	His	Leu	Gln	Thr	His	Arg	Gly	Pro	Ala		
881					886					891					896		
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Lys	His	Tyr	Met	Cys	Pro	Ile	Cys	Gly	Glu	Arg	Phe	Pro	Ser	Leu	Leu		
897					902					907					912		
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Thr	Leu	Thr	Glu	His	Lys	Val	Thr	His	Ser	Lys	Ser	Leu	Asp	Thr	Gly		
913					918					923					928		
acc	tgt	cgc	atc	tgc	aag	atg	ccc	ctg	cag	agc	gag	gag	gag	ttt	att	2832	
Thr	Cys	Arg	Ile	Cys	Lys	Met	Pro	Leu	Gln	Ser	Glu	Glu	Glu	Phe	Ile		
929					934					939					944		
gag	cac	tgc	cag	atg	cac	cct	gac	ctg	cgc	aac	tca	ctc	acg	ggc	ttc	2880	
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945					950					955					960		
cgc	tgt	gtg	gtc	tgc	atg	cag	aca	gtc	act	tcc	acg	ctt	gag	ctc	aag	2928	
Arg	Cys	Val	Val	Cys	Met	Gln	Thr	Val	Thr	Ser	Thr	Leu	Glu	Leu	Lys		
961					966					971					976		
atc	cat	ggc	acc	ttc	cac	atg	cag	aag	ctg	gcg	ggc	agc	tca	gcg	gcg	2976	
Ile	His	Gly	Thr	Phe	His	Met	Gln	Lys	Leu	Ala	Gly	Ser	Ser	Ala	Ala		
977					982					987					992		
tcc	tcc	ccc	aat	ggc	cag	ggg	ctg	cag	aag	ctc	tac	aag	tgc	gcc	ctg	3024	
Ser	Ser	Pro	Asn	Gly	Gln	Gly	Leu	Gln	Lys	Leu	Tyr	Lys	Cys	Ala	Leu		
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Cys	Leu	Lys	Glu	Phe	Arg	Ser	Lys	Gln	Asp	Leu	Val	Lys	Leu	Asp	Val		
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Asn	Gly	Leu	Pro	Tyr	Gly	Leu	Cys	Ala	Gly	Cys	Met	Ala	Arg	Ser	Ala		
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Cys	Ala	Gly	Leu	Arg	Cys	Pro	Glu	Cys	Ser	Val	Lys	Phe	Glu	Ser	Ala		
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Glu	Asp	Leu	Glu	Ser	His	Met	Gln	Val	Asp	His	Arg	Asp	Leu	Thr	Pro		
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Glu	Thr	Ser	Gly	Pro	Arg	Lys	Gly	Thr	Gln	Thr	Ser	Pro	Val	Pro	Arg		
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aaa	aag	aca	tac	cag	tgc	atc	aag	tgc	cag	atg	acc	ttc	gag	aac	gag	3360	
Lys	Lys	Thr	Tyr	Gln	Cys	Ile	Lys	Cys	Gln	Met	Thr	Phe	Glu	Asn	Glu		

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Asn His Glu Cys Lys Leu Cys Asn Gln Met Phe Asp Ser Pro Ala Lys				
1137	1142	1147	1152	
ctc ctc tgt cac ctc att gag cac agc ttc gag ggc atg ggc ggc acc				3504
Leu Leu Cys His Leu Ile Glu His Ser Phe Glu Gly Met Gly Gly Thr				
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ttc aaa tgc ccc gtg tgt ttc aca gtc ttc gtc cag gcc aac aag ttg				3552
Phe Lys Cys Pro Val Cys Phe Thr Val Phe Val Gln Ala Asn Lys Leu				
1169	1174	1179	1184	
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Gln Gln His Ile Phe Ala Val His Gly Gln Glu Asp Lys Ile Tyr Asp				
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Cys Ser Gln Cys Pro Gln Lys Phe Phe Phe Gln Thr Glu Leu Gln Asn				
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His Thr Met Ser Gln His Ala Gln *				
1217	1222			
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atgaatataa tcggtttcag tgcaactgga tgggtctgctt ttaaagtga cttaatctga				4300
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 Leu Ser Leu Ala Pro Ser Ala Ser Ser Asp Ile Ser Ala Ser Arg Pro  
 23 28 33 38

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 Asn Ile Leu Leu Leu Met Ala Asp Asp Leu Gly Ile Gly Asp Ile Gly  
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tgc tat ggc aac aac acc atg agg act ccg aat att gac cgc ctt gca 426  
 Cys Tyr Gly Asn Asn Thr Met Arg Thr Pro Asn Ile Asp Arg Leu Ala  
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gag gac ggc gtg aag ctg acc caa cac atc tct gcc gca tct ttg tgc 474  
 Glu Asp Gly Val Lys Leu Thr Gln His Ile Ser Ala Ala Ser Leu Cys  
 71 76 81 86

acc cca agc aga gcc gcc ttc ctc acg ggc aga tac cct gtg cga tca 522  
 Thr Pro Ser Arg Ala Ala Phe Leu Thr Gly Arg Tyr Pro Val Arg Ser  
 87 92 97 102

ggg atg gtt tcc agc att ggt tac cgt gtt ctt cag tgg acc gga gca 570  
 Gly Met Val Ser Ser Ile Gly Tyr Arg Val Leu Gln Trp Thr Gly Ala  
 103 108 113 118

tct gga ggt ctt cca aca aat gag aca act ttt gca aaa ata ctg gaa 618  
 Ser Gly Gly Leu Pro Thr Asn Glu Thr Thr Phe Ala Lys Ile Leu Glu  
 119 124 129 134

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 Asn Cys Glu Ser Ala Ser Asp His Cys His His Pro Leu His His Gly  
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Phe Asp His Phe Tyr Gly Met Pro Phe Ser Leu Met Gly Asp Cys Ala	
167 172 177 182	
cgc tgg gaa ctc tca gag aag cgt gtc aac ctg gaa caa aaa ctc aac	810
Arg Trp Glu Leu Ser Glu Lys Arg Val Asn Leu Glu Gln Lys Leu Asn	
183 188 193 198	
ttc ctc ttc caa gtc ctg gcc ttg gtt gcc ctc aca ctg gta gca ggg	858
Phe Leu Phe Gln Val Leu Ala Leu Val Ala Leu Thr Leu Val Ala Gly	
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Lys Leu Thr His Leu Ile Pro Val Ser Trp Met Pro Val Ile Trp Ser	
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Ala Leu Ser Ala Val Leu Leu Leu Ala Ser Ser Tyr Phe Val Gly Ala	
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ctg att gtc cat gcc gat tgc ttt ctg atg aga aac cac acc atc acg	1002
Leu Ile Val His Ala Asp Cys Phe Leu Met Arg Asn His Thr Ile Thr	
247 252 257 262	
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Glu Gln Pro Met Cys Phe Gln Arg Thr Thr Pro Leu Ile Leu Gln Glu	
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Val Ala Ser Phe Leu Lys Arg Asn Lys His Gly Pro Phe Leu Leu Phe	
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Val Ser Phe Leu His Val His Ile Pro Leu Ile Thr Met Glu Asn Phe	
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311 316 321 326	
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Ser Asn Ser Thr Leu Ile Tyr Phe Thr Ser Asp His Gly Gly Ser Leu	
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359 364 369 374	
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Lys Gly Gly Lys Gly Met Gly Gly Trp Glu Gly Gly Ile Arg Val Pro	
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Gly Ile Phe Arg Trp Pro Gly Val Leu Pro Ala Gly Arg Val Ile Gly	
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Glu Pro Thr Ser Leu Met Asp Val Phe Pro Thr Val Gly Arg Leu Ala	
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Gly Ser Glu Val Pro Gln Asp Arg Val Ile Asp Gly Gln Asp Leu Leu	
423 428 433 438	
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His Tyr Cys Glu Arg Phe Leu His Ala Ala Arg Trp His Gln Arg Asp	
455 460 465 470	
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Arg Gly Thr Met Trp Lys Val His Phe Val Thr Pro Val Phe Gln Pro	
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487 492 497 502	
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Glu Lys Val Val His His Asp Pro Pro Leu Leu Phe Asp Leu Ser Arg	
503 508 513 518	
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Asp Pro Ser Glu Thr His Ile Leu Thr Pro Ala Ser Glu Pro Val Phe	
519 524 529 534	
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Tyr Gln Val Met Glu Arg Val Gln Gln Ala Val Trp Glu His Gln Arg	
535 540 545 550	
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Thr Leu Ser Pro Val Pro Leu Gln Leu Asp Arg Leu Gly Asn Ile Trp	
551 556 561 566	
aga ccg tgg ctg cag ccc tgc tgt ggc ccg ttc ccc ctc tgc tgg tgc	1962
Arg Pro Trp Leu Gln Pro Cys Cys Gly Pro Phe Pro Leu Cys Trp Cys	
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atg aat atc cat atg aag aga aaa aca ata aag aat atc aac acc ttt      164
Met Asn Ile His Met Lys Arg Lys Thr Ile Lys Asn Ile Asn Thr Phe
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Glu Asn Arg Met Leu Met Leu Asp Gly Met Pro Ala Val Arg Val Lys
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aca gag ctt ttg gaa tct gaa caa ggg tct cca aac gtc cac aac tat      260
Thr Glu Leu Leu Glu Ser Glu Gln Gly Ser Pro Asn Val His Asn Tyr
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ccc gat atg gaa gcc gtt ccc ctg ttg cta aat aat gtg aaa ggg gag      308
Pro Asp Met Glu Ala Val Pro Leu Leu Leu Asn Asn Val Lys Gly Glu
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ccc ccg gag gac tcg tta tct gta gat cac ttc caa aca caa act gag      356
Pro Pro Glu Asp Ser Leu Ser Val Asp His Phe Gln Thr Gln Thr Glu
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cca gtg gac ttg tca ata aac aaa gcc agg acg tcc cct act gcc gtt      404
Pro Val Asp Leu Ser Ile Asn Lys Ala Arg Thr Ser Pro Thr Ala Val
 81             86             91             96

tca tcc tcc cca gtt tcc atg aca gca tct gcc tcc tca cct tct tca      452
Ser Ser Ser Pro Val Ser Met Thr Ala Ser Ala Ser Ser Pro Ser Ser
 97             102            107            112

act tca acc tct tca tcg tct tct agt cgt cta gcc tca tcc cca act      500
Thr Ser Thr Ser Ser Ser Ser Ser Ser Arg Leu Ala Ser Ser Pro Thr
113             118            123            128

gtt atc aca tca gta tct tca gcg tca tct tcg tca aca gta tta act      548
Val Ile Thr Ser Val Ser Ser Ala Ser Ser Ser Ser Thr Val Leu Thr
129             134            139            144

cca ggg ccc ctt gtg gcc tct gca tct ggt gtt gga ggc cag cag ttt      596
Pro Gly Pro Leu Val Ala Ser Ala Ser Gly Val Gly Gly Gln Gln Phe
145             150            155            160

ttg cac att atc cat ccc gta ccg cct tca agt ccc atg aat tta cag      644
Leu His Ile Ile His Pro Val Pro Pro Ser Ser Pro Met Asn Leu Gln
161             166            171            176

tct aac aaa ctg agt cat gtt cac cgc atc ccc gtg gtg gta cag tcg      692

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Ser Asn Lys Leu Ser His Val His Arg Ile Pro Val Val Val Gln Ser	
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193 198 203 208	
act att gtc gtg ccg ctt ttg gag gat ggg aga ggc cat ggc aaa gca	788
Thr Ile Val Val Pro Leu Leu Glu Asp Gly Arg Gly His Gly Lys Ala	
209 214 219 224	
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Gln Met Asp Pro Arg Gly Leu Ser Pro Arg Gln Ser Lys Ser Asp Ser	
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Asp Asp Asp Asp Leu Pro Asn Val Thr Leu Asp Ser Val Asn Glu Thr	
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Gly Ser Thr Ala Leu Ser Ile Ala Arg Ala Val Gln Glu Val His Pro	
257 262 267 272	
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Ser Pro Val Ser Arg Val Arg Gly Asn Arg Met Asn Asn Gln Lys Phe	
273 278 283 288	
cct tgt tca att tca cca ttt agt att gag agc aca aga cgc cag aga	1028
Pro Cys Ser Ile Ser Pro Phe Ser Ile Glu Ser Thr Arg Arg Gln Arg	
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Arg Ser Glu Ser Pro Asp Ser Arg Lys Arg Arg Ile His Arg Cys Asp	
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Phe Glu Gly Cys Asn Lys Val Tyr Thr Lys Ser Ser His Leu Lys Ala	
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His Arg Arg Thr His Thr Gly Glu Lys Pro Tyr Lys Cys Thr Trp Glu	
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Ile Leu Glu Ile Cys Asp Asn Val Thr Met Tyr Trp Ile Asn Pro Thr	
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att atc tta gtt tct gag tta caa gac ttt gag gag gag gga gaa gat	793
Ile Ile Leu Val Ser Glu Leu Gln Asp Phe Glu Glu Glu Gly Glu Asp	
206 211 216 221	
ctt cac ttt cct gcc aac gaa aaa aaa ggg att gaa caa aat gaa cag	841
Leu His Phe Pro Ala Asn Glu Lys Lys Gly Ile Glu Gln Asn Glu Gln	
222 227 232 237	
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Trp Val Val Pro Gln Val Lys Val Glu Lys Thr Arg His Ala Arg Gln	
238 243 248 253	
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Ala Ser Glu Glu Glu Leu Pro Ile Asn Asp Tyr Thr Glu Asn Gly Ile	
254 259 264 269	
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Arg Arg Gly Asn Arg Tyr Cys Arg Arg Val Cys Glu Pro Leu Leu Gly	
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Tyr Tyr Pro Tyr Pro Tyr Cys Tyr Gln Gly Gly Arg Val Ile Cys Arg	
302 307 312 317	
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Val Ile Met Pro Cys Asn Trp Trp Val Ala Arg Met Leu Gly Arg Val	
318 323 328 333	
taa tagg aggtttgagc tcaaatgctt aaactgctgg caacatataa taaatgcatg	1186
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1 5 10

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Ile Leu Asn Ala Glu Ala Phe Lys Ser Lys Lys Ile Cys Lys Ser Leu  
14 19 24 29

aag att tgt gga ctg gtg ttt ggt atc ctg gcc cta act cta att gtc 265  
Lys Ile Cys Gly Leu Val Phe Gly Ile Leu Ala Leu Thr Leu Ile Val  
30 35 40 45

ctg ttt tgg ggg agc aag cac ttc tgg ccg gag gta ccc aaa aaa gcc 313  
Leu Phe Trp Gly Ser Lys His Phe Trp Pro Glu Val Pro Lys Lys Ala  
46 51 56 61

tat gac atg gag cac act ttc tac agc aat gga gag aag aag aag att 361  
Tyr Asp Met Glu His Thr Phe Tyr Ser Asn Gly Glu Lys Lys Lys Ile  
62 67 72 77

tac atg gaa att gat cct gtg acc aga act gaa ata ttc aga agc gga 409  
Tyr Met Glu Ile Asp Pro Val Thr Arg Thr Glu Ile Phe Arg Ser Gly  
78 83 88 93

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Thr Gly Ile Tyr Phe Val Gly Leu Gln Lys Cys Phe Ile Lys Thr Gln  
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att aaa gtg att cct gaa ttt tct gaa cca gaa gag gaa ata gat gag 553  
Ile Lys Val Ile Pro Glu Phe Ser Glu Pro Glu Glu Glu Ile Asp Glu  
126 131 136 141

aat gaa gaa att acc aca act ttc ttt gaa cag tca gtg att tgg gtc	601
Asn Glu Glu Ile Thr Thr Thr Phe Phe Glu Gln Ser Val Ile Trp Val	
142 147 152 157	
cca gca gaa aag cct att gaa aac cga gat ttt ctt aaa aat tcc aaa	649
Pro Ala Glu Lys Pro Ile Glu Asn Arg Asp Phe Leu Lys Asn Ser Lys	
158 163 168 173	
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Ile Leu Glu Ile Cys Asp Asn Val Thr Met Tyr Trp Ile Asn Pro Thr	
174 179 184 189	
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Leu Ile Ser Val Ser Glu Leu Gln Asp Phe Glu Glu Glu Gly Glu Asp	
190 195 200 205	
ctt cac ttt cct gcc aac gaa aaa aaa ggg att gaa caa aat gaa cag	793
Leu His Phe Pro Ala Asn Glu Lys Lys Gly Ile Glu Gln Asn Glu Gln	
206 211 216 221	
tgg gtg gtc cct caa gtg aaa gta gag aag acc cgt cac gcc aga caa	841
Trp Val Val Pro Gln Val Lys Val Glu Lys Thr Arg His Ala Arg Gln	
222 227 232 237	
gca agt gag gaa gaa ctt cca ata aat gac tat act gaa aat gga ata	889
Ala Ser Glu Glu Glu Leu Pro Ile Asn Asp Tyr Thr Glu Asn Gly Ile	
238 243 248 253	
gaa ttt gat ccc atg ctg gat gag aga ggt tat tgt tgt att tac tgc	937
Glu Phe Asp Pro Met Leu Asp Glu Arg Gly Tyr Cys Cys Ile Tyr Cys	
254 259 264 269	
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Arg Arg Gly Asn Arg Tyr Cys Arg Arg Val Cys Glu Pro Leu Leu Gly	
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Tyr Tyr Pro Tyr Pro Tyr Cys Tyr Gln Gly Gly Arg Val Ile Cys Arg	
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gtc atc atg cct tgt aac tgg tgg gtg gcc cgc atg ctg ggg agg gtc	1081
Val Ile Met Pro Cys Asn Trp Trp Val Ala Arg Met Leu Gly Arg Val	
302 307 312 317	
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318	
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gattgctgct gaacacactg ggtaagtgtt tgctgagaat attcacagca actgaaatgg	1318
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ccaggggacc tgagaggcgc gacaaacagt cggcgcggtt ggtactcgcg cctgcagagc      180
tttcaacctc cgcgccggct gcgctgttt ctcggccagg ggagcaaggc cacgcggcct      240
agcgcagccg agtcggaacc aaccggttgt ttggtgaaac ctaccccaga gcctcccgcg      300
gccacagag cacagactgt ttttgccaac c   atg_gca tct gga gat gac agt      352
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cct atc ttt gaa gat gat gag agc cct cct tac agc cta gaa aaa atg      400
Pro Ile Phe Glu Asp Asp Glu Ser Pro Pro Tyr Ser Leu Glu Lys Met
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Thr Asp Leu Val Ala Val Trp Asp Val Ala Leu Ser Asp Gly Val His
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aag atc gaa ttt gaa cat ggg act aca tca ggc aaa cga gta gta tat      496
Lys Ile Glu Phe Glu His Gly Thr Thr Ser Gly Lys Arg Val Val Tyr
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gta gat gga aag gaa gag ata aga aaa gag tgg atg ttc aaa tta gtg      544
Val Asp Gly Lys Glu Glu Ile Arg Lys Glu Trp Met Phe Lys Leu Val
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ggc aaa gaa aca ttc tat gtt gga gct gca aag aca aaa gcg acc ata      592
Gly Lys Glu Thr Phe Tyr Val Gly Ala Ala Lys Thr Lys Ala Thr Ile
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aat ata gac gct atc agt ggt ttt gct tat gaa tat act ctg gaa att      640
Asn Ile Asp Ala Ile Ser Gly Phe Ala Tyr Glu Tyr Thr Leu Glu Ile
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aat ggg aaa agt ctc aag aag tat atg gag gac aga tca aaa acc acc      688
Asn Gly Lys Ser Leu Lys Lys Tyr Met Glu Asp Arg Ser Lys Thr Thr
 104               109               114              119

aat act tgg gta tta cac atg gat ggt gag aac ttt aga att gtt ttg      736

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Ala Gly Glu Phe Val Asp Asp Gly Thr Glu Thr His Phe Ser Ile Gly	
152 157 162 167	
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Asn His Asp Cys Tyr Ile Lys Ala Val Ser Ser Gly Lys Arg Lys Glu	
168 173 178 183	
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Gly Ile Ile His Thr Leu Ile Val Asp Asn Arg Glu Ile Pro Glu Ile	
184 189 194 199	
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Trp Val Arg Gly Leu Gly Ala Ser Tyr Arg Arg Gly Ala Ser Ser Phe	
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Pro Val Pro Pro Pro Gly Ala Gln Gly Val Ala Glu Leu Leu Arg Asp	
26 31 36 41	



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42 47 52 57	
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Met Pro Gly Gln Cys Ser Val Leu Leu Phe Pro Gly Gln Gly Ser Gln	
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Val Val Gly Met Gly Arg Gly Leu Leu Asn Tyr Pro Arg Val Arg Glu	
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Leu Tyr Ala Ala Ala Arg Arg Val Leu Gly Tyr Asp Leu Leu Glu Leu	
90 95 100 105	
agc ctg cac ggg ccg cag gag acc ctg gac cgc acc gtg cac tgt cag	387
Ser Leu His Gly Pro Gln Glu Thr Leu Asp Arg Thr Val His Cys Gln	
106 111 116 121	
ccc gcg atc ttc gtg gca tgc ctg gcc gct gtc gag aaa cta cat cac	435
Pro Ala Ile Phe Val Ala Ser Leu Ala Ala Val Glu Lys Leu His His	
122 127 132 137	
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Leu Gln Pro Ser Val Ile Glu Asn Cys Val Ala Ala Ala Gly Phe Ser	
138 143 148 153	
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Val Gly Glu Phe Ala Ala Leu Val Phe Ala Gly Ala Met Glu Phe Ala	
154 159 164 169	
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Ser Glu Ala Val Pro Ser Gly Met Leu Ser Val Leu Gly Gln Pro Gln	
186 191 196 201	
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Ser Lys Phe Asn Phe Ala Cys Leu Glu Ala Arg Glu His Cys Lys Ser	
202 207 212 217	
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Leu Gly Ile Glu Asn Pro Val Cys Glu Val Ser Asn Tyr Leu Phe Pro	
218 223 228 233	
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Asp Cys Arg Val Ile Ser Gly His Gln Glu Ala Leu Arg Phe Leu Gln	
234 239 244 249	
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Thr Gln Ala Leu Lys Ala Val Asp Ile Lys Lys Pro Leu Val Ser Val	
282 287 292 297	
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Tyr Ser Asn Val His Ala His Arg Tyr Arg His Pro Gly His Ile His	
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Lys Leu Leu Ala Gln Gln Leu Val Ser Pro Val Lys Trp Glu Gln Thr	
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Met His Ala Ile Tyr Glu Arg Lys Lys Gly Arg Gly Phe Pro Gln Thr	
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Phe Glu Val Gly Pro Gly Arg Gln Leu Gly Ala Ile Leu Lys Ser Cys	
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Met Pro Ala Thr  
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cgg aag cca atg aga tat ggg cat aca gag gga cac acg gag gtc tgt 163  
Arg Lys Pro Met Arg Tyr Gly His Thr Glu Gly His Thr Glu Val Cys  
5 10 15 20

ttt gat gat tct ggg agt ttt att gtg act tgt gga agt gat ggt gat 211  
Phe Asp Asp Ser Gly Ser Phe Ile Val Thr Cys Gly Ser Asp Gly Asp  
21 26 31 36

gtg agg att tgg gaa gac ttg gat gat gat gat cct aag ttc att aat 259  
Val Arg Ile Trp Glu Asp Leu Asp Asp Asp Asp Pro Lys Phe Ile Asn  
37 42 47 52

gtt gga gaa aag gca tat tca tgt gct ttg aag agt gga aaa ctg gtc 307  
Val Gly Glu Lys Ala Tyr Ser Cys Ala Leu Lys Ser Gly Lys Leu Val  
53 58 63 68

act gca gtt tct aat aat act att caa gtc cac aca ttt cct gaa gga 355  
Thr Ala Val Ser Asn Asn Thr Ile Gln Val His Thr Phe Pro Glu Gly  
69 74 79 84

gtt cca gat ggt ata ttg act cgc ttc act aca aat gca aac cat gtg 403  
Val Pro Asp Gly Ile Leu Thr Arg Phe Thr Thr Asn Ala Asn His Val  
85 90 95 100

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Val Phe Asn Gly Asp Gly Thr Lys Ile Ala Ala Gly Ser Ser Asp Phe  
101 106 111 116

cta gtc aaa att gtg gat gtg atg gat agc agc caa cag aaa aca ttt 499  
Leu Val Lys Ile Val Asp Val Met Asp Ser Ser Gln Gln Lys Thr Phe  
117 122 127 132

cga gga cat gat gcc cct gtt tta agt ctt tcc ttt gat cct aag gac 547  
Arg Gly His Asp Ala Pro Val Leu Ser Leu Ser Phe Asp Pro Lys Asp  
133 138 143 148

atc ttt ctg gca tca gct agt tgt gat gga tct gtc aga gtg tgg caa 595  
Ile Phe Leu Ala Ser Ala Ser Cys Asp Gly Ser Val Arg Val Trp Gln  
149 154 159 164

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Ile Ser Asp Gln Thr Cys Ala Ile Ser Trp Pro Leu Leu Gln Lys Cys  
165 170 175 180

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Asn Asp Val Ile Asn Ala Lys Ser Ile Cys Arg Leu Ala Trp Gln Pro  
181 186 191 196

aaa agt ggg aag tta ctg gca att cct gtg gaa aaa tct gtt aag cta	739
Lys Ser Gly Lys Leu Leu Ala Ile Pro Val Glu Lys Ser Val Lys Leu	
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Tyr Arg Arg Glu Ser Trp Ser His Gln Phe Asp Leu Ser Asp Asn Phe	
213 218 223 228	
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245 250 255 260	
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261 266 271 276	
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Cys Gly Leu Ala Trp His Pro Thr Cys Gly Arg Ile Ser Tyr Thr Asp	
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325 330 335 340	
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357 362 367 372	
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373 378 383 388	
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389 394 399 404	
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453 458 463 468	
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485 490 495 500	
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Cys Glu Ser Thr Asp Glu Leu Ala Ser Lys Leu His Cys Leu His Phe	
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Ser Ser Trp Asp Ser Ser Lys Glu Trp Ile Ile Asp Leu Pro Gln Asn	
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677 682 687 692	
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Tyr Leu Ala Lys Asn Gly Tyr Glu Tyr Glu Glu Ser Thr Lys Asn Gln	
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gca aca aaa gag caa cag gaa ctt tta atg aaa atg ctt gcg ctt tct	2419
Ala Thr Lys Glu Gln Gln Glu Leu Leu Met Lys Met Leu Ala Leu Ser	
757 762 767 772	
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Cys Lys Leu Glu Arg Glu Phe Arg Cys Val Glu Leu Ala Asp Leu Met	
773 778 783 788	
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Ala Glu Leu Thr Ala Thr Gln Val Glu Glu Glu Glu Glu Glu Asp	
821 826 831 836	
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Phe Arg Lys Lys Leu Asn Ala Gly Tyr Ser Asn Thr Ala Thr Glu Trp	
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agc caa cca agg ttc aga aat caa gtt gaa gaa gat gct gag gac agt	2707
Ser Gln Pro Arg Phe Arg Asn Gln Val Glu Glu Asp Ala Glu Asp Ser	
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Asn Ser Phe Ser Lys Ser Thr Asn Ser Ser Asp Val Ser Ala Lys Ser				
885	890	895	900	
ggg gca gtt acc ttt agc agc caa gga cga gta aat ccc ttt aag gta				2851
Gly Ala Val Thr Phe Ser Ser Gln Gly Arg Val Asn Pro Phe Lys Val				
901	906	911	916	
tca gcc agt tcc aaa gaa cca gcc atg tca atg aat tca gca cgt tca				2899
Ser Ala Ser Ser Lys Glu Pro Ala Met Ser Met Asn Ser Ala Arg Ser				
917	922	927	932	
act aat att tta gac aat atg ggc aaa tca tcc aag aaa tcc act gca				2947
Thr Asn Ile Leu Asp Asn Met Gly Lys Ser Ser Lys Lys Ser Thr Ala				
933	938	943	948	
ctt agt cga act aca aat aat gaa aag tct ccc att ata aag cct ctg				2995
Leu Ser Arg Thr Thr Asn Asn Glu Lys Ser Pro Ile Ile Lys Pro Leu				
949	954	959	964	
att cca aag ccg aag cct aag cag gca tct gca gca tcc tat ttc cag				3043
Ile Pro Lys Pro Lys Pro Lys Gln Ala Ser Ala Ala Ser Tyr Phe Gln				
965	970	975	980	
aaa aga aat tct caa act aat aaa act gag gaa gtg aaa gaa gaa aat				3091
Lys Arg Asn Ser Gln Thr Asn Lys Thr Glu Glu Val Lys Glu Glu Asn				
981	986	991	996	
ctt aaa aat gta tta tct gaa acc cca gct ata tgt cct cct caa aac				3139
Leu Lys Asn Val Leu Ser Glu Thr Pro Ala Ile Cys Pro Pro Gln Asn				
997	1002	1007	1012	
act gaa aac caa agg cca aag acc ggg ttc cag atg tgg tta gaa gaa				3187
Thr Glu Asn Gln Arg Pro Lys Thr Gly Phe Gln Met Trp Leu Glu Glu				
1013	1018	1023	1028	
aat aga agt aat att ttg tct gac aat cct gac ttt tca gat gaa gca				3235
Asn Arg Ser Asn Ile Leu Ser Asp Asn Pro Asp Phe Ser Asp Glu Ala				
1029	1034	1039	1044	
gac ata ata aaa gaa gga atg att cga ttt aga gta ttg tca act gaa				3283
Asp Ile Ile Lys Glu Gly Met Ile Arg Phe Arg Val Leu Ser Thr Glu				
1045	1050	1055	1060	
gaa aga aag gtg tgg gct aac aaa gcc aaa gga gaa acg gca agt gaa				3331
Glu Arg Lys Val Trp Ala Asn Lys Ala Lys Gly Glu Thr Ala Ser Glu				
1061	1066	1071	1076	
gga act gaa gca aag aag cga aaa cgt gtg gtt gat gaa agt gat gaa				3379
Gly Thr Glu Ala Lys Lys Arg Lys Arg Val Val Asp Glu Ser Asp Glu				
1077	1082	1087	1092	
aca gaa aac cag gaa gaa aaa gca aaa gag aac ctg aat ttg tct aaa				3427
Thr Glu Asn Gln Glu Glu Lys Ala Lys Glu Asn Leu Asn Leu Ser Lys				
1093	1098	1103	1108	

aag cag aaa cct tta gat ttt tct aca aat cag aaa cta tca gct ttt 3475  
 Lys Gln Lys Pro Leu Asp Phe Ser Thr Asn Gln Lys Leu Ser Ala Phe  
 1109 1114 1119 1124

gca ttt aag cag gag taa aggaag aaagtgaccc tagggaagta atggattttt 3529  
 Ala Phe Lys Gln Glu \*  
 1125 1130

ttttactcat ctttgaatat agactcgagt ctttgggaaa ctcattatat atatattttt 3589

taaagagttt gaagcaactg tttgtcttta taagataatg tagtaattat attggtgtag 3649

gtaacaggac atatgtaaaa actatcatct ttgcagatta ctctgcctcc aaatgcaggg 3709

cctttcagag atgcattgtg attgtaatta ctgagttgaa gctccaacca atttgaattt 3769

gtttcttaac cttgaaaaat cattaaagcc aaggatttaa aacctttgtg cattaatacc 3829

ttctaggggt ttggttcatt tggtttttgt catgtgcaag gaaggacaat agtcctcttt 3889

ccaagtgtgt tagcatagac ttctctatat gttctacta gacctagggg atgacgtctt 3949

ttaataatac tggccctaaa catgtaaata atcttgtagg tgagactttt tcttttgtgt 4009

ttcggaaatt tcctatgtgg ctttcagttg tctgtttgta tagcctggat ttttttgagg 4069

taaatgaaac tttctcattt gtaaaaaaaaaaaaa 4103

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 <222> (44)..(655)

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 Gly Trp Leu Glu Ser Leu Arg Thr Ala Gln Lys Thr Ala Leu Leu Gln  
 5 10 15 20

gac ggg aga agg aag gtt cac tat tta ttc cca gac ggc aag gaa atg 151  
 Asp Gly Arg Arg Lys Val His Tyr Leu Phe Pro Asp Gly Lys Glu Met  
 21 26 31 36

gct gaa gaa tat gac gag aag acg agt gaa cta ctt gtg aga aag tgg 199  
 Ala Glu Glu Tyr Asp Glu Lys Thr Ser Glu Leu Leu Val Arg Lys Trp  
 37 42 47 52



cgt gtg aaa agt gcc ctg gga gcc atg ggc cag tgg cag ctt gaa gta	247
Arg Val Lys Ser Ala Leu Gly Ala Met Gly Gln Trp Gln Leu Glu Val	
53 58 63 68	
gga gac cca gcg ccc cta gga gca ggg aac ctg ggg cct gaa ctc atc	295
Gly Asp Pro Ala Pro Leu Gly Ala Gly Asn Leu Gly Pro Glu Leu Ile	
69 74 79 84	
aag gaa agc aat gcc aat cct atc ttc atg cgc aag gac acc aag atg	343
Lys Glu Ser Asn Ala Asn Pro Ile Phe Met Arg Lys Asp Thr Lys Met	
85 90 95 100	
agt ttc cag tgg cgg att cga aac ctc ccc tat cct aag gat gtc tat	391
Ser Phe Gln Trp Arg Ile Arg Asn Leu Pro Tyr Pro Lys Asp Val Tyr	
101 106 111 116	
agt gtc tct gtg gac cag aag gag cgc tgc atc att gtc aga aca acc	439
Ser Val Ser Val Asp Gln Lys Glu Arg Cys Ile Ile Val Arg Thr Thr	
117 122 127 132	
aac aag aag tac tac aag aag ttc tcc att cct gat cta gat aga cac	487
Asn Lys Lys Tyr Tyr Lys Lys Phe Ser Ile Pro Asp Leu Asp Arg His	
133 138 143 148	
cag cta cct ctg gat gac gcc ttg ctg agc ttt gcc cac gcc aac tgc	535
Gln Leu Pro Leu Asp Asp Ala Leu Leu Ser Phe Ala His Ala Asn Cys	
149 154 159 164	
acc ctg atc atc tct tac cag aag cca aag gag gtt gtg gtg gcc gag	583
Thr Leu Ile Ile Ser Tyr Gln Lys Pro Lys Glu Val Val Val Ala Glu	
165 170 175 180	
tct gag cta cag aag gaa cta aag aag gtg aag aca gcc cac agc aac	631
Ser Glu Leu Gln Lys Glu Leu Lys Lys Val Lys Thr Ala His Ser Asn	
181 186 191 196	
gat ggg gac tgc aag acc cag tag ttggcccctg agccttatac ctccaccaca	685
Asp Gly Asp Cys Lys Thr Gln *	
197 202	
gggggtgccg tgagacttca aggcttggcc cttcttgacc acggcagcct cctgtcttct	745
aggagctatc aagggtctct aagaactggg catggggcac tctagccag tgagtcattg	805
tcatatattcc tgagtaaagt cattctgagt tacttactgc aaaaaaaaaa aa	857

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<222> (74)..(1777)

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Met Ala Asp Leu Ala Asn Glu Glu Lys Pro Ala Ile  
1 5 10

gct ccg ccc gtc ttt gtg ttt cag aag gat aaa gga caa aag tcc cct 157  
Ala Pro Pro Val Phe Val Phe Gln Lys Asp Lys Gly Gln Lys Ser Pro  
13 18 23 28

gca gag caa aaa aac ttg tcg gat tcg gga gag gag cct cgg ggg gag 205  
Ala Glu Gln Lys Asn Leu Ser Asp Ser Gly Glu Glu Pro Arg Gly Glu  
29 34 39 44

gct gag gcc ccc cac cat ggc acg ggt cac ccc gag tca gct ggc gag 253  
Ala Glu Ala Pro His His Gly Thr Gly His Pro Glu Ser Ala Gly Glu  
45 50 55 60

cat gcc cta gaa cct cct gcc cct gct ggc gcc tca gcc agc act cct 301  
His Ala Leu Glu Pro Pro Ala Pro Ala Gly Ala Ser Ala Ser Thr Pro  
61 66 71 76

ccg cct ccc gct cct gaa gcc cag ctt cct cct ttt ccg cga gaa ctg 349  
Pro Pro Pro Ala Pro Glu Ala Gln Leu Pro Pro Phe Pro Arg Glu Leu  
77 82 87 92

gca ggg agg tca gct ggc ggc tcc agt cct gaa ggc gga gaa gat tct 397  
Ala Gly Arg Ser Ala Gly Gly Ser Ser Pro Glu Gly Gly Glu Asp Ser  
93 98 103 108

gac aga gaa gat gga aat tac tgc cct cct gtc aag cga gaa aga aca 445  
Asp Arg Glu Asp Gly Asn Tyr Cys Pro Pro Val Lys Arg Glu Arg Thr  
109 114 119 124

tcc tct tta acc cag ttc cca ccc tca cag tca gag gaa agg agc agt 493  
Ser Ser Leu Thr Gln Phe Pro Pro Ser Gln Ser Glu Glu Arg Ser Ser  
125 130 135 140

ggc ttc cgg ttg aag cca cca acg ctg atc cac ggc caa gcc ccc agc 541  
Gly Phe Arg Leu Lys Pro Pro Thr Leu Ile His Gly Gln Ala Pro Ser  
141 146 151 156

gca ggt ctg cca agc cag aag ccc aag gag cag cag cgg agc gtg ctt 589  
Ala Gly Leu Pro Ser Gln Lys Pro Lys Glu Gln Gln Arg Ser Val Leu  
157 162 167 172

cgc ccg gca gtg tta caa gct ccg cag cca aag gcg ctg tcc cag act 637  
Arg Pro Ala Val Leu Gln Ala Pro Gln Pro Lys Ala Leu Ser Gln Thr  
173 178 183 188

gtc ccc agc agt ggc acc aac ggg gtc agc ctc cca gca gac tgc acg 685  
Val Pro Ser Ser Gly Thr Asn Gly Val Ser Leu Pro Ala Asp Cys Thr  
189 194 199 204

ggg gca gtg ccc gca gca tcc cct gac act gct gca tgg aga agt cct	733
Gly Ala Val Pro Ala Ala Ser Pro Asp Thr Ala Ala Trp Arg Ser Pro	
205 210 215 220	
tcc gaa gct gcc gat gag gtg tgt gca ctt gag gag aaa gag ccc cag	781
Ser Glu Ala Ala Asp Glu Val Cys Ala Leu Glu Glu Lys Glu Pro Gln	
221 226 231 236	
aaa aat gag tcc agc aat gcc tct gaa gag gaa gcc tgt gag aaa aaa	829
Lys Asn Glu Ser Ser Asn Ala Ser Glu Glu Glu Ala Cys Glu Lys Lys	
237 242 247 252	
gac ccc gcc aca cag caa gcc ttt gta ttt ggg cag aac ttg agg gac	877
Asp Pro Ala Thr Gln Gln Ala Phe Val Phe Gly Gln Asn Leu Arg Asp	
253 258 263 268	
aga gtt aag ctg ata aat gag agc gtg gac gaa gcc gac atg gag aat	925
Arg Val Lys Leu Ile Asn Glu Ser Val Asp Glu Ala Asp Met Glu Asn	
269 274 279 284	
gct gga cac ccc agc gca gac acg cca acc gca acg aac tat ttc ctc	973
Ala Gly His Pro Ser Ala Asp Thr Pro Thr Ala Thr Asn Tyr Phe Leu	
285 290 295 300	
cag tat atc agt tcc agt tta gag aac tca acc aat agt gcc gac gcc	1021
Gln Tyr Ile Ser Ser Ser Leu Glu Asn Ser Thr Asn Ser Ala Asp Ala	
301 306 311 316	
tcc agc aac aaa ttt gta ttt ggc cag aac atg agc gag cga gtt ttg	1069
Ser Ser Asn Lys Phe Val Phe Gly Gln Asn Met Ser Glu Arg Val Leu	
317 322 327 332	
agc ccc cca aaa tta aac gag gtc agt tca gat gcc aac agg gaa aat	1117
Ser Pro Pro Lys Leu Asn Glu Val Ser Ser Asp Ala Asn Arg Glu Asn	
333 338 343 348	
gca gct gcc gag tca ggg tct gag tcc tcg tcc cag gag gcc acc cct	1165
Ala Ala Ala Glu Ser Gly Ser Glu Ser Ser Ser Gln Glu Ala Thr Pro	
349 354 359 364	
gag aaa gag tcc ctg gct gag tcg gca gcc gcc tac acc aag gca aca	1213
Glu Lys Glu Ser Leu Ala Glu Ser Ala Ala Ala Tyr Thr Lys Ala Thr	
365 370 375 380	
gcg cgg aag tgt ttg ttg gaa aaa gtg gaa gtc atc acc ggg gag gag	1261
Ala Arg Lys Cys Leu Leu Glu Lys Val Glu Val Ile Thr Gly Glu Glu	
381 386 391 396	
gcg gag agc aat gtg tta cag atg cag tgc aag ctg ttt gtc ttt gac	1309
Ala Glu Ser Asn Val Leu Gln Met Gln Cys Lys Leu Phe Val Phe Asp	
397 402 407 412	
aag acc tca cag tcc tgg gtg gag aga ggc cgg ggg ctg ctc aga ctc	1357
Lys Thr Ser Gln Ser Trp Val Glu Arg Gly Arg Gly Leu Leu Arg Leu	
413 418 423 428	
aat gac atg gcg tcc acc gat gac ggc aca cta cag tcc cga cta gtg	1405

Asn Asp Met Ala Ser Thr Asp Asp Gly Thr Leu Gln Ser Arg Leu Val	
429 434 439 444	
atg cgg acc cag ggg agc ctg cga ctg atc ctc aac acc aag ctg tgg	1453
Met Arg Thr Gln Gly Ser Leu Arg Leu Ile Leu Asn Thr Lys Leu Trp	
445 450 455 460	
gcc cag atg cag atc gac aag gcc agc gag aag agc att cgc atc aca	1501
Ala Gln Met Gln Ile Asp Lys Ala Ser Glu Lys Ser Ile Arg Ile Thr	
461 466 471 476	
gcc atg gac acc gag gac cag gcc gtg aag gtc ttc ctg atc tcg gcc	1549
Ala Met Asp Thr Glu Asp Gln Gly Val Lys Val Phe Leu Ile Ser Ala	
477 482 487 492	
agc tcc aag gac aca ggt cag ttg tat gca gcc ctg cac cac cgc atc	1597
Ser Ser Lys Asp Thr Gly Gln Leu Tyr Ala Ala Leu His His Arg Ile	
493 498 503 508	
ctg gcc ctg cgc agc cgc gtg gag cag gag cag gag gcc aag atg ccc	1645
Leu Ala Leu Arg Ser Arg Val Glu Gln Glu Gln Glu Ala Lys Met Pro	
509 514 519 524	
gcg cct gag cct ggg gca gcc cca tcc aac gag gag gac gac agc gac	1693
Ala Pro Glu Pro Gly Ala Ala Pro Ser Asn Glu Glu Asp Asp Ser Asp	
525 530 535 540	
gat gac gat gtc ctg gct cct tca ggg gcc acc gca gct ggt gct ggt	1741
Asp Asp Asp Val Leu Ala Pro Ser Gly Ala Thr Ala Ala Gly Ala Gly	
541 546 551 556	
gac gaa ggg gac ggg cag acg acc ggg agc aca tag cggc cgggagcccc	1791
Asp Glu Gly Asp Gly Gln Thr Thr Gly Ser Thr *	
557 562 567	
gctgcacacc aggctgctgc tttgtccgtc tatccacccg cccacccgcc cccacccac	1851
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accgcacgt cctgttcaaa agcagactcg ggaactgcct gaatgtggtt tgggacacga	1971
gacctcatca tattgatgag cgaacaaaca agaacatttc ctccctcccc tcctttgaat	2031
tgaaatggca cattaagact tgtoacggct tctcactggg actggagacc tcgttccttc	2091
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agtgtagaca ctgggcccac tggacgtgct gttaactact atcttcattt cccacttccc	2331
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tttggtttct taggttaaga tgctctcgag cgttgagcag gcacagctct gtcgaggtcc	2451

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tgggtcccaga acaggcagtc tcacaagcac gcagcacact ggagtggacg cctgtgcccc 2871  
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ctggccccc cccccagca agcctgagcc cggaagaac cagaggccct cccgagagac 3111  
ccagtcacac gtctctgctt taagccttag ccagctagtg acgagtacaa cgagataacg 3171  
cccatgtgtt ttggaacatt tatgtaagat tgcataatga aatgtatttg ggaactacat 3231  
taaactttta actaaaaaaaa aaaaa 3256

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<212> DNA  
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<220>  
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<222> (272) .. (4312)

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tccctccact gggcgtgaga gccctgccc aggaggccca ggacaaatgg ccccatagtg 180  
gaaactggga agcttttagg catctgatca gagcgggagc cagccggggg accacagtgc 240  
tggacaggcc aaccaactca aacttgaaga c atg aaa tcc cca agg aga acc 292  
Met Lys Ser Pro Arg Arg Thr  
1 5  
act ttg tgc ctc atg ttt att gtg att tat tct tcc aaa gct gca ctg 340  
Thr Leu Cys Leu Met Phe Ile Val Ile Tyr Ser Ser Lys Ala Ala Leu  
8 13 18 23

aac tgg aat tac gag tct act att cat cct ttg agt ctt cat gaa cat	388
Asn Trp Asn Tyr Glu Ser Thr Ile His Pro Leu Ser Leu His Glu His	
24 29 34 39	
gaa cca gct ggt gaa gag gca ctg agg caa aaa cga gcc gtt gcc aca	436
Glu Pro Ala Gly Glu Glu Ala Leu Arg Gln Lys Arg Ala Val Ala Thr	
40 45 50 55	
aaa agt cct acg gct gaa gaa tac act gtt aat att gag atc agt ttt	484
Lys Ser Pro Thr Ala Glu Glu Tyr Thr Val Asn Ile Glu Ile Ser Phe	
56 61 66 71	
gaa aat gca tcc ttc ctg gat cct atc aaa gcc tac ttg aac agc ctc	532
Glu Asn Ala Ser Phe Leu Asp Pro Ile Lys Ala Tyr Leu Asn Ser Leu	
72 77 82 87	
agt ttt cca att cat ggg aat aac act gac caa att act gac att ttg	580
Ser Phe Pro Ile His Gly Asn Asn Thr Asp Gln Ile Thr Asp Ile Leu	
88 93 98 103	
agc ata aat gtg aca aca gtc tgc aga cct gct gga aat gaa atc tgg	628
Ser Ile Asn Val Thr Thr Val Cys Arg Pro Ala Gly Asn Glu Ile Trp	
104 109 114 119	
tgc tcc tgc gag aca ggt tat ggg tgg cct cgg gaa agg tgt ctt cac	676
Cys Ser Cys Glu Thr Gly Tyr Gly Trp Pro Arg Glu Arg Cys Leu His	
120 125 130 135	
aat ctc att tgt caa gag cgt gac gtc ttc ctc cca ggg cac cat tgc	724
Asn Leu Ile Cys Gln Glu Arg Asp Val Phe Leu Pro Gly His His Cys	
136 141 146 151	
agt tgc ctt aaa gaa ctg cct ccc aat gga cct ttt tgc ctg ctt cag	772
Ser Cys Leu Lys Glu Leu Pro Pro Asn Gly Pro Phe Cys Leu Leu Gln	
152 157 162 167	
gaa gat gtt acc ctg aac atg aga gtc aga cta aat gta ggc ttt caa	820
Glu Asp Val Thr Leu Asn Met Arg Val Arg Leu Asn Val Gly Phe Gln	
168 173 178 183	
gaa gac ctc atg aac act tcc tcc gcc ctc tat agg tcc tac aag acc	868
Glu Asp Leu Met Asn Thr Ser Ser Ala Leu Tyr Arg Ser Tyr Lys Thr	
184 189 194 199	
gac ttg gaa aca gcg ttc cgg aag ggt tac gga att tta cca ggc ttc	916
Asp Leu Glu Thr Ala Phe Arg Lys Gly Tyr Gly Ile Leu Pro Gly Phe	
200 205 210 215	
aag ggc gtg act gtg aca ggg ttc aag tct gga agt gtg gtt gtg aca	964
Lys Gly Val Thr Val Thr Gly Phe Lys Ser Gly Ser Val Val Val Thr	
216 221 226 231	
tat gaa gtc aag act aca cca cca tca ctt gag tta ata cat aaa gcc	1012
Tyr Glu Val Lys Thr Thr Pro Pro Ser Leu Glu Leu Ile His Lys Ala	
232 237 242 247	
aat gaa caa gtt gta cag agc ctc aat cag acc tac aaa atg gac tac	1060

Asn Glu Gln Val Val Gln Ser Leu Asn Gln Thr Tyr Lys Met Asp Tyr	
248 253 258 263	
aac tcc ttt caa gca gtt act atc aat gaa agc aat ttc ttt gtc aca	1108
Asn Ser Phe Gln Ala Val Thr Ile Asn Glu Ser Asn Phe Phe Val Thr	
264 269 274 279	
cca gaa atc atc ttt gaa ggg gac aca gtc agt ctg gtg tgt gaa aag	1156
Pro Glu Ile Ile Phe Glu Gly Asp Thr Val Ser Leu Val Cys Glu Lys	
280 285 290 295	
gaa gtt ttg tcc tcc aat gtg tct tgg cgc tat gaa gaa cag cag ttg	1204
Glu Val Leu Ser Ser Asn Val Ser Trp Arg Tyr Glu Glu Gln Gln Leu	
296 301 306 311	
gaa atc cag aac agc agc aga ttc tcg att tac acc gca ctt ttc aac	1252
Glu Ile Gln Asn Ser Ser Arg Phe Ser Ile Tyr Thr Ala Leu Phe Asn	
312 317 322 327	
aac atg act tcg gtg tcc aag ctc acc atc cac aac atc act cca ggt	1300
Asn Met Thr Ser Val Ser Lys Leu Thr Ile His Asn Ile Thr Pro Gly	
328 333 338 343	
gat gca ggt gaa tat gtt tgc aaa ctg ata tta gac att ttt gaa tat	1348
Asp Ala Gly Glu Tyr Val Cys Lys Leu Ile Leu Asp Ile Phe Glu Tyr	
344 349 354 359	
gag tgc aag aag aaa ata gat gtt atg ccc atc caa att ttg gca aat	1396
Glu Cys Lys Lys Lys Ile Asp Val Met Pro Ile Gln Ile Leu Ala Asn	
360 365 370 375	
gaa gaa atg aag gtg atg tgc gac aac aat cct gta tct ttg aac tgc	1444
Glu Glu Met Lys Val Met Cys Asp Asn Asn Pro Val Ser Leu Asn Cys	
376 381 386 391	
tgc agt cag ggt aat gtt aat tgg agc aaa gta gaa tgg aag cag gaa	1492
Cys Ser Gln Gly Asn Val Asn Trp Ser Lys Val Glu Trp Lys Gln Glu	
392 397 402 407	
gga aaa ata aat att cca gga acc cct gag aca gac ata gat tct agc	1540
Gly Lys Ile Asn Ile Pro Gly Thr Pro Glu Thr Asp Ile Asp Ser Ser	
408 413 418 423	
tgc agc aga tac acc ctc aag gct gat gga acc cag tgc cca agc ggg	1588
Cys Ser Arg Tyr Thr Leu Lys Ala Asp Gly Thr Gln Cys Pro Ser Gly	
424 429 434 439	
tcg tct gga aca aca gtc atc tac act tgt gag ttc atc agt gcc tat	1636
Ser Ser Gly Thr Thr Val Ile Tyr Thr Cys Glu Phe Ile Ser Ala Tyr	
440 445 450 455	
gga gcc aga ggc agt gca aac ata aaa gtg aca ttc atc tct gtg gcc	1684
Gly Ala Arg Gly Ser Ala Asn Ile Lys Val Thr Phe Ile Ser Val Ala	
456 461 466 471	
aat cta aca ata acc ccg gac cca att tct gtt tct gag gga caa aac	1732
Asn Leu Thr Ile Thr Pro Asp Pro Ile Ser Val Ser Glu Gly Gln Asn	

472	477	482	487	
ttt tct ata aaa tgc atc agt gat gtg agt aac tat gat gag gtt tat				1780
Phe Ser Ile Lys Cys Ile Ser Asp Val Ser Asn Tyr Asp Glu Val Tyr				
488	493	498	503	
tgg aac act tct gct gga att aaa ata tac caa aga ttt tat acc acg				1828
Trp Asn Thr Ser Ala Gly Ile Lys Ile Tyr Gln Arg Phe Tyr Thr Thr				
504	509	514	519	
agg agg tat ctt gat gga gca gaa tca gta ctg aca gtc aag acc tcg				1876
Arg Arg Tyr Leu Asp Gly Ala Glu Ser Val Leu Thr Val Lys Thr Ser				
520	525	530	535	
acc agg gag tgg aat gga acc tat cac tgc ata ttt aga tat aag aat				1924
Thr Arg Glu Trp Asn Gly Thr Tyr His Cys Ile Phe Arg Tyr Lys Asn				
536	541	546	551	
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Ser Tyr Ser Ile Ala Thr Lys Asp Val Ile Val His Pro Leu Pro Leu				
552	557	562	567	
aag ctg aac atc atg gtt gat cct ttg gaa gct act gtt tca tgc agt				2020
Lys Leu Asn Ile Met Val Asp Pro Leu Glu Ala Thr Val Ser Cys Ser				
568	573	578	583	
ggt tcc cat cac atc aag tgc tgc ata gag gag gat gga gac tac aaa				2068
Gly Ser His His Ile Lys Cys Cys Ile Glu Glu Asp Gly Asp Tyr Lys				
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gtt act ttc cat atg ggt tcc tca tcc ctt cct gct gca aaa gaa gtt				2116
Val Thr Phe His Met Gly Ser Ser Ser Leu Pro Ala Ala Lys Glu Val				
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Asn Lys Lys Gln Val Cys Tyr Lys His Asn Phe Asn Ala Ser Ser Val				
616	621	626	631	
tcc tgg tgt tca aaa act gtt gat gtg tgt tgt cac ttt acc aat gct				2212
Ser Trp Cys Ser Lys Thr Val Asp Val Cys Cys His Phe Thr Asn Ala				
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Ala Asn Asn Ser Val Trp Ser Pro Ser Met Lys Leu Asn Leu Val Pro				
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Gly Glu Asn Ile Thr Cys Gln Asp Pro Val Ile Gly Val Gly Glu Pro				
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Gly Lys Val Ile Gln Lys Leu Cys Arg Phe Ser Asn Val Pro Ser Ser				
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Pro Glu Ser Pro Ile Gly Gly Thr Ile Thr Tyr Lys Cys Val Gly Ser				
696	701	706	711	



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728 733 738 743	
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Met Leu Pro Thr Tyr Leu Lys Asp Leu Ser Ile Ser Ile Asp Lys Ala	
744 749 754 759	
gaa cat gaa atc agc tct tct cct ggg agt ctg gga gcc att att aac	2596
Glu His Glu Ile Ser Ser Ser Pro Gly Ser Leu Gly Ala Ile Ile Asn	
760 765 770 775	
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Ile Leu Asp Leu Leu Ser Thr Val Pro Thr Gln Val Asn Ser Glu Met	
776 781 786 791	
atg acg cac gtg ctc tct acg gtt aat gtc atc ctt ggc aag ccc gtc	2692
Met Thr His Val Leu Ser Thr Val Asn Val Ile Leu Gly Lys Pro Val	
792 797 802 807	
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Leu Asn Thr Trp Lys Val Leu Gln Gln Gln Trp Thr Asn Gln Ser Ser	
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Gln Leu Leu His Ser Val Glu Arg Phe Ser Gln Ala Leu Gln Ser Gly	
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Asp Ser Pro Pro Leu Ser Phe Ser Gln Thr Asn Val Gln Met Ser Ser	
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Thr Val Ile Lys Ser Ser His Pro Glu Thr Tyr Gln Gln Arg Phe Val	
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Phe Pro Tyr Phe Asp Leu Trp Gly Asn Val Val Ile Asp Lys Ser Tyr	
872 877 882 887	
cta gaa aac ttg cag tgc gat tgc tct att gtc acc atg gct ttc cca	2980
Leu Glu Asn Leu Gln Ser Asp Ser Ser Ile Val Thr Met Ala Phe Pro	
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Asp Ser Pro Asp Pro Ser Ser Leu Leu Gly Ile Leu Leu Asp Ile Ile	
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Ser Tyr Val Gly Val Gly Phe Ser Ile Leu Ser Leu Ala Ala Cys Leu	
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Tyr Met Arg His Thr Cys Ile Val Asn Ile Ala Ala Ser Leu Leu Val	
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gcc aac acc tgg ttc att gtg gtc gct gcc atc cag gac aat cgc tac	3508
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Val Ile Thr Leu Gly Ala Thr Gln Pro Arg Glu Val Tyr Thr Arg Lys	
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Gly Gly Leu Gln Lys Arg His Ala Arg Val Thr Val Lys Tyr Asp Arg	
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Arg Glu Leu Gln Arg Arg Leu Asp Val Glu Lys Trp Ile Asp Gly Arg	
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Leu Glu Glu Leu Tyr Arg Gly Met Glu Ala Asp Met Pro Asp Glu Ile	
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Asn Ile Asp Glu Leu Leu Glu Leu Glu Ser Glu Glu Glu Arg Ser Arg	
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Lys Ile Gln Gly Leu Leu Lys Ser Cys Gly Lys Pro Val Glu Asp Phe	
92 97 102 107	
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Ile Gln Glu Leu Leu Ala Lys Leu Gln Gly Leu His Arg Gln Pro Gly	
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Leu Arg Gln Pro Ser Pro Ser His Asp Gly Ser Leu Ser Pro Leu Gln	
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Glu Ala Glu Gly Ala Ile Tyr His Leu Ala Ser Ile Leu Phe Val Val		
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Gly Phe Met Gly Gly Ser Gly Phe Phe Gly Leu Leu Tyr Val Phe Ser		
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56 61 66 71		
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Val Cys Ala Ala Asp Ile Phe Ser Trp Asn Phe Val Leu Phe Val Ile		
72 77 82 87		
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Cys Phe Met Gln Phe Val His Ile Ala Tyr Gln Val Arg Ser Ile Thr		
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Phe Ala Arg Glu Phe Gln Val Leu Tyr Ser Ser Leu Phe Gln Pro Leu		
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Gly Ile Ser Leu Pro Val Phe Arg Thr Ile Ala Leu Ser Ser Glu Val		
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136 141 146 151		
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Asp Gly Glu Phe Leu His Tyr Ile Phe Pro Leu Gln Phe Leu Asp Ser		
168 173 178 183		
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Pro Glu Trp Asp Ser Leu Arg Pro Thr Glu Glu Gly Ile Phe Gln Val		
184 189 194 199		
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Thr Leu Thr Ala Glu Thr Asp Cys Arg Tyr Val Ser Trp Arg Arg Lys		
200 205 210 215		
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Lys	Leu	Tyr	Leu	Leu	Phe	Ala	Gln	His	Arg	Tyr	Ile	Ser	Arg	Leu	Phe		
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Ser	Val	Leu	Ile	Gly	Ser	Asp	Ile	Ala	Asp	Lys	Leu	Tyr	Ala	Leu	Asn		
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Asp	Arg	Ser	Gly	Pro	Ser	Ser	Ala	Glu	Met	Leu	Gln	Phe	Ala	Gly	Gly		
248					253					258					263		
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Pro	Leu	Gln	Thr	Leu	Phe	Ala	Cys	Val	Ser	Pro	Val	Glu	Asp	Ala	Gly		
264					269					274					279		
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Leu	Lys	Asp	Leu	Cys	Lys	Glu	Asn	Tyr	Lys	Thr	Leu	Leu	Lys	Glu	Ile		
328					333					338					343		
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Asp	Asp	Ala	Asn	Lys	Trp	Lys	His	Ile	Pro	Cys	Ser	Trp	Met	Gly	Arg		
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Ala	Ile	Pro	Ile	Lys	Ile	Pro	Pro	Ser	Phe	Phe	Thr	Glu	Leu	Glu	Lys		
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aca	att	cta	aaa	ttc	ata	tgg	aac	caa	aaa	aga	gcc	cac	att	gtc	aaa	1373	
Thr	Ile	Leu	Lys	Phe	Ile	Trp	Asn	Gln	Lys	Arg	Ala	His	Ile	Val	Lys		
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408					413					418					423		
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Phe	Lys	Arg	Tyr	Tyr	Lys	Ala	Thr	Val	Thr	Lys	Thr	Ala	Trp	Tyr	Trp		
424					429					434					439		
tat	aga	aat	agg	cgc	ata	gac	caa	tgg	aac	aga	ata	gag	aac	cca	gaa	1517	
Tyr	Arg	Asn	Arg	Arg	Ile	Asp	Gln	Trp	Asn	Arg	Ile	Glu	Asn	Pro	Glu		

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Ile Asn Pro Asn Thr Tyr Ser Gln Leu Ile Phe Asp Lys Ala Asn Lys				
456	461	466	471	
aac ata aac cag gga agg gac acc ctt ttc aac aga tgg tgc tgg gat				1613
Asn Ile Asn Gln Gly Arg Asp Thr Leu Phe Asn Arg Trp Cys Trp Asp				
472	477	482	487	
aat tgg cta gcc aca tgt agg aga atg aaa ctg gat tct cat ctc tca				1661
Asn Trp Leu Ala Thr Cys Arg Arg Met Lys Leu Asp Ser His Leu Ser				
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Pro Tyr Ile Lys Ile Asn Ser Met Asp *				
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Gly Leu Thr Val Arg Ser Pro Asp Glu Pro Leu Pro Val Val Arg Ile	
23 28 33 38	

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Pro Val Ala Leu Gln Arg Gln Leu Glu Gln Arg Gln Ser Arg Arg Arg	
39 44 49 54	

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Asn Leu Pro Arg Pro Val Leu Val Arg Pro Gly Pro Leu Leu Val Ser	
55 60 65 70	

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Ala Arg Arg Pro Glu Leu Asn Gln Pro Ala Arg Leu Thr Leu Gly Arg	
71 76 81 86	

tgg gag cgc gcg ccg cta gcc tct caa ggc tgg aag agt cga cgc gcg	340
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103 108 113 118

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Val Arg Lys Leu Ser Ser Lys Gly Ser Phe Ala Asp Leu Gly Leu Glu  
119 124 129 134

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Pro Arg Val Leu His Ala Leu Gln Glu Ala Ala Pro Glu Val Val Gln  
135 140 145 150

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151 156 161 166

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167 172 177 182

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231 236 241 246

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247 252 257 262

cca ggg gct ctg tgg aag gcc ctg aaa agt cga ctg atc agt ctg gag 868  
Pro Gly Ala Leu Trp Lys Ala Leu Lys Ser Arg Leu Ile Ser Leu Glu  
263 268 273 278

caa ctc tcc ttc ttg gtg ttg gat gag gca gac aca ctg ctg gat gaa 916  
Gln Leu Ser Phe Leu Val Leu Asp Glu Ala Asp Thr Leu Leu Asp Glu  
279 284 289 294

agc ttc ctg gaa ctg gtg gac tac atc tta gag aag agc cac ata gca 964  
Ser Phe Leu Glu Leu Val Asp Tyr Ile Leu Glu Lys Ser His Ile Ala  
295 300 305 310

gaa ggc cca gct gac ttg gaa gac ccc ttc aat ccc aaa gct cag tta 1012  
Glu Gly Pro Ala Asp Leu Glu Asp Pro Phe Asn Pro Lys Ala Gln Leu

311	316	321	326	
gtg ctg gta gga gcc aca ttt ccc gaa ggt gta ggc cag ttg ctg aat				1060
Val Leu Val Gly Ala Thr Phe Pro Glu Gly Val Gly Gln Leu Leu Asn				
327	332	337	342	
aaa gtc gcc agc cca gat gct gtc acc acc atc acc agc tcc aag ctc				1108
Lys Val Ala Ser Pro Asp Ala Val Thr Thr Ile Thr Ser Ser Lys Leu				
343	348	353	358	
cac tgt atc atg cct cat gtg aaa cag aca ttt ctg aga ctg aag gga				1156
His Cys Ile Met Pro His Val Lys Gln Thr Phe Leu Arg Leu Lys Gly				
359	364	369	374	
gca gat aag gtg gcc gag ctg gtg cac atc ctc aag cat cgt gac aga				1204
Ala Asp Lys Val Ala Glu Leu Val His Ile Leu Lys His Arg Asp Arg				
375	380	385	390	
gca gaa agg act ggt ccc tca gga act gtt ctg gtg ttc tgt aat agc				1252
Ala Glu Arg Thr Gly Pro Ser Gly Thr Val Leu Val Phe Cys Asn Ser				
391	396	401	406	
tcc agc act gtg aac tgg ctg gga tat att ctg gat gac cac aaa atc				1300
Ser Ser Thr Val Asn Trp Leu Gly Tyr Ile Leu Asp Asp His Lys Ile				
407	412	417	422	
caa cac cta agg ttg cag ggg caa atg cca gcc ttg atg agg gta gga				1348
Gln His Leu Arg Leu Gln Gly Gln Met Pro Ala Leu Met Arg Val Gly				
423	428	433	438	
atc ttc cag tcc ttc cag aag agc tcc cga gac ata ctt ctc tgc aca				1396
Ile Phe Gln Ser Phe Gln Lys Ser Ser Arg Asp Ile Leu Leu Cys Thr				
439	444	449	454	
gac ata gcc tct cgg ggc ctg gac agc act ggt gtg gag ctg gtt gtc				1444
Asp Ile Ala Ser Arg Gly Leu Asp Ser Thr Gly Val Glu Leu Val Val				
455	460	465	470	
aat tat gat ttc ccc cca acg ctg caa gat tac atc cac aga gca ggg				1492
Asn Tyr Asp Phe Pro Pro Thr Leu Gln Asp Tyr Ile His Arg Ala Gly				
471	476	481	486	
aga gtg ggc cgt gtg ggg agc gag gtg cca ggc acc gtc atc agt ttt				1540
Arg Val Gly Arg Val Gly Ser Glu Val Pro Gly Thr Val Ile Ser Phe				
487	492	497	502	
gtg acc cat ccc tgg gat gtg agc ctg gtt cag aag att gag ctg gcg				1588
Val Thr His Pro Trp Asp Val Ser Leu Val Gln Lys Ile Glu Leu Ala				
503	508	513	518	
gct cgc cga agg aga agt ctt cca gga cta gca tcc tcg gtg aaa gag				1636
Ala Arg Arg Arg Arg Ser Leu Pro Gly Leu Ala Ser Ser Val Lys Glu				
519	524	529	534	
cct ttg ccc caa gca acc tga tt ttgacaaatc tgattaaaat gtgatgctag				1689
Pro Leu Pro Gln Ala Thr *				
535	540			

aacagggatc tttccagta tcttgagtgg gtgaccacac ttgtcagtgg gaggctctgg 1749  
 gctgcccctgt cggctccttg agggcgggat gaactgcttt gtgacttggg aaggtacgct 1809  
 gctggccagc attggagaag aagctgctga gcatggcttt ctgtagtctt tagcaagaca 1869  
 caagtggatt ttgactttgt atcatgtcat gatttctaac aataaatgat gtttttatgt 1929  
 gcaaaaaaaaa aaaa 1943

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 <212> DNA  
 <213> Homo sapiens

<220>  
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 <222> (71)..(808)

<400> 397  
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 Met Glu Arg Thr Glu Met Met Pro Thr Ile Asn Ser Gln  
 1 5 10  
 ctg gaa ttt aaa agt aag cct ttt cct tta gtc tcc tct tcc cgg tgg 157  
 Leu Glu Phe Lys Ser Lys Pro Phe Pro Leu Val Ser Ser Ser Arg Trp  
 14 19 24 29  
 ttg gta aaa aga ggt gaa ttg aca gcc tat gtt gaa gac act gtg ctt 205  
 Leu Val Lys Arg Gly Glu Leu Thr Ala Tyr Val Glu Asp Thr Val Leu  
 30 35 40 45  
 ttc tca aga agg aca tcc aaa cag caa gtc tac ttc ttt ctc ttt aac 253  
 Phe Ser Arg Arg Thr Ser Lys Gln Gln Val Tyr Phe Phe Leu Phe Asn  
 46 51 56 61  
 gat gtg ctc att atc acc aag aag aag agt gaa gaa agt tac aac gtc 301  
 Asp Val Leu Ile Ile Thr Lys Lys Lys Ser Glu Glu Ser Tyr Asn Val  
 62 67 72 77  
 aat gat tat tcc tta aga gat cag cta ttg gtg gaa tct tgt gac aat 349  
 Asn Asp Tyr Ser Leu Arg Asp Gln Leu Leu Val Glu Ser Cys Asp Asn  
 78 83 88 93  
 gaa gag ctt aat tct tct cca ggg aag aac agc tcc aca atg ctc tat 397  
 Glu Glu Leu Asn Ser Ser Pro Gly Lys Asn Ser Ser Thr Met Leu Tyr  
 94 99 104 109  
 tca aga cag agc tct gcc agt cac ctc ttt act ctg aca gtc ctt agt 445  
 Ser Arg Gln Ser Ser Ala Ser His Leu Phe Thr Leu Thr Val Leu Ser  
 110 115 120 125

aac cac gcg aat gag aaa gtg gag atg cta cta gga gct gag acg cag	493
Asn His Ala Asn Glu Lys Val Glu Met Leu Leu Gly Ala Glu Thr Gln	
126 131 136 141	
agc gag cga gcc cgc tgg ata act gcc ctg gga cac agc agc ggg aag	541
Ser Glu Arg Ala Arg Trp Ile Thr Ala Leu Gly His Ser Ser Gly Lys	
142 147 152 157	
ccg cct gca gac cga acc tca ctg acc cag gtg gaa atc gtt agg tca	589
Pro Pro Ala Asp Arg Thr Ser Leu Thr Gln Val Glu Ile Val Arg Ser	
158 163 168 173	
ttt act gct aag cag cca gat gaa ctc tcc ctg cag gtg gct gac gtc	637
Phe Thr Ala Lys Gln Pro Asp Glu Leu Ser Leu Gln Val Ala Asp Val	
174 179 184 189	
gtc ctc atc tat caa cgt gtc agc gat ggc tgg tat gag ggg gaa cga	685
Val Leu Ile Tyr Gln Arg Val Ser Asp Gly Trp Tyr Glu Gly Glu Arg	
190 195 200 205	
cta cga gat gga gaa aga ggc tgg ttt cct atg gaa tgt gcc aag gag	733
Leu Arg Asp Gly Glu Arg Gly Trp Phe Pro Met Glu Cys Ala Lys Glu	
206 211 216 221	
ata aca tgt caa gct aca att gat aag aat gtg gag aga atg gga cgc	781
Ile Thr Cys Gln Ala Thr Ile Asp Lys Asn Val Glu Arg Met Gly Arg	
222 227 232 237	
ttg cta gga ctg gag acc aac gtg tag tctct cagatggtct tttgttactg	833
Leu Leu Gly Leu Glu Thr Asn Val *	
238 243	
caagatttgc acgacactta ccgggctggg tgggttctggg ctagttttat tgttaatttt	893
gtcacagcct atttaattaa aagaacgaaa acacttgcct ttaagcttgc caggttggtc	953
cgctctctca tgagaagagc ttggatacag tgagtttgca cagctcagtt tttacctaac	1013
cacacacttg cagacctcct gaggtacaca gaatagctga gcagttcact tcagggatca	1073
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gttctcccag tattagcaag attgtatatc tgtaaagaat gtccagtttt gtaaataattt	1253
ccctgccttt ttttttcttt ttttacctct gattttaatg cttcgttaac ttcaaaagga	1313
actggtagag ttcagaaggt gagctgttgt ttttctaaac ctcttcccag gaaggggaca	1373
ttgacacttg aatttttgtc acctttttcc tcattagaag gaaagtagaa agccttactg	1433
taggattttt aaaaaaaaaat ccatctcacc/ccatattggg ottaaataag tatagactaa	1493
ttaacctaag ctacctttta caacgtagaa tttagatggg ttcatatatg tgagaaaaac	1553

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gtggtgtgat cttggccac tgcaacctct gcttcctagg ttcaagtgat tctcctgcct 1673  
cagcctccca agtagctggg attgtaagag tatgccacca cgcccagcta ctttttgtat 1733  
ttttagtaga gacaggggtt catcatgttg gccaggatgg tctcttaact cctgccctca 1793  
agtgatccac cagagaggag atcctcgcc tccccagtg ctgggattat aggcatgagc 1853  
cacctgccc agcctacttt ctaattaatt aaaaaaaaa aa 1895

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<212> DNA  
<213> Homo sapiens

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gcgactcggg ccaccgaatg tgagaccgag tccctttatg tccactagcg acacgctgat 120  
ttgaaccctg cttcgacgtg tgtgtcatgg cttaaaaata gctgctaata tgtcaacctg 180  
tcttgggcag aaacagcggc ggcgacagca gcaggagcgt catggccgtg gcgctgtctg 240  
cgccggcgat ccgcctttcg gactgaggcc cagcgcagcg cttgcaaaga gagccaaaga 300  
gctgagcaaa aggagctgct gcagcttgaa gaaaaagcca cccctgaagg ctctgccag 360  
agccaggctt accttctctc cctcgagaat cttctcccga aggaccagcc caggggaagg 420  
aagcagctgc tctggactca ctcaagtgtg tctcacatcc tttcctcttc cagcagcagc 480  
tacctggcaa ctgaacccat catcaccaca gccactcctg cagctgccac ggtttctgcc 540  
acctetaag atg tgc cct ggt aac tgg ctt tgg gct tct atg act ttt 588  
Met Cys Pro Gly Asn Trp Leu Trp Ala Ser Met Thr Phe  
1 5 10  
atg gcc cgc ttc tcc cgg agt agc tca agg tct cct gtt cga act cga 636  
Met Ala Arg Phe Ser Arg Ser Ser Arg Ser Pro Val Arg Thr Arg  
14 19 24 29  
ggg acc ctg gag gag atg cca acc gtt caa cat cct ttc ctc aat gtc 684  
Gly Thr Leu Glu Glu Met Pro Thr Val Gln His Pro Phe Leu Asn Val  
30 35 40 45  
ttc gag ttg gag cgg ctc ctc tac aca ggc aag aca gcc tgt aac cat 732  
Phe Glu Leu Glu Arg Leu Leu Tyr Thr Gly Lys Thr Ala Cys Asn His

46	51	56	61	
gcc gac gag gtc tgg cca ggc ctc tat ctc gga gac cag gac atg gct				780
Ala Asp Glu Val Trp Pro Gly Leu Tyr Leu Gly Asp Gln Asp Met Ala				
62	67	72	77	
aac aac cgc cgg gag ctt cgc cgc ctg ggc atc acg cac gtc ctc aat				828
Asn Asn Arg Arg Glu Leu Arg Arg Leu Gly Ile Thr His Val Leu Asn				
78	83	88	93	
gcc tca cac agc cgg tgg cga ggc acg ccc gag gcc tat gag ggg ctg				876
Ala Ser His Ser Arg Trp Arg Gly Thr Pro Glu Ala Tyr Glu Gly Leu				
94	99	104	109	
ggc atc cgc tac ctg ggt gtt gag gcc cac gac tcg cca gcc ttt gac				924
Gly Ile Arg Tyr Leu Gly Val Glu Ala His Asp Ser Pro Ala Phe Asp				
110	115	120	125	
atg agc atc cac ttc cag acg gct gcc gac ttc atc cac cgg gcg ctg				972
Met Ser Ile His Phe Gln Thr Ala Ala Asp Phe Ile His Arg Ala Leu				
126	131	136	141	
agc cag cca gga ggg aag atc ctg gtg cat tgt gct gtg ggc gtg agc				1020
Ser Gln Pro Gly Gly Lys Ile Leu Val His Cys Ala Val Gly Val Ser				
142	147	152	157	
cga tcc gcc acc ctg gta ctg gcc tac ctc atg ctg tac cac cac ctt				1068
Arg Ser Ala Thr Leu Val Leu Ala Tyr Leu Met Leu Tyr His His Leu				
158	163	168	173	
acc ctc gtg gag gcc atc aag aaa gtc aaa gac cac cga ggc atc atc				1116
Thr Leu Val Glu Ala Ile Lys Lys Val Lys Asp His Arg Gly Ile Ile				
174	179	184	189	
ccc aac cgg ggc ttc ctg agg cag ctc ctg gcc ctg gac cgc agg ctg				1164
Pro Asn Arg Gly Phe Leu Arg Gln Leu Leu Ala Leu Asp Arg Arg Leu				
190	195	200	205	
cgg cag ggt ctg gaa gca tga gg ggagggggag agaggtcagg ccaggcccgt				1217
Arg Gln Gly Leu Glu Ala *				
206	211			
gggtaggtcc ctggctccca gctggagata ggaggcccag gtggcaggta gcaggaggcc				1277
cagatcaccc atcctcccct ggggtcagga gaggccgagc cccaggccac tgtcactctt				1337
tgtgggaggg gacggggagt gaggttgggc agtgtggtgg atgggcaccc aggaagggtt				1397
gaccagggaa ggaggcagct aggotgtaga tggaagatgg tcctgggatt cgaacaccgc				1457
tgggatctgg ccagggtgct ccttgggatt cacagtccct tcccctcttt gtgcccaggt				1517
gtttccctct ctcctcacc aaaacaaaag ggccatctct gcctgcact tgtgcagaaa				1577
gtcagggata cggcaagcat gaatgcaatg gtgtagagtt gtgtgaaacc cctagcatag				1637
agacagacag cgaagagatg gtgtgaaaag cttgcagaac cagacagaga accccacaga				1697

ctttccactc caagcacagg aggaggtagc tagcgtgtga gggttggcac taggcccacg 1757  
gctgctgctt gggccaaaaa catacagagg tgcattggctg gcagtcttga aattgtcact 1817  
cgcttactgg atccaagcgt ctcgaggata aataaagatc atgaaaaaga aaaaaaaaaa 1877  
a 1878

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<212> DNA  
<213> Homo sapiens

<220>  
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<222> (163) .. (1092)

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tttagtggtc agtagcagcg gggatagccc gggggccggg gt atg gcc acg gag 174  
Met Ala Thr Glu  
1  
tta cag tgt ccg gac tcc atg ccc tgt cac aac cag caa gta aac tct 222  
Leu Gln Cys Pro Asp Ser Met Pro Cys His Asn Gln Gln Val Asn Ser  
5 10 15 20  
gcc tca acc cca agt ccc gag cag ctg cga cct ggc gat ctg atc ctg 270  
Ala Ser Thr Pro Ser Pro Glu Gln Leu Arg Pro Gly Asp Leu Ile Leu  
21 26 31 36  
gac cac gca ggg gga aac aga gcc tcc agg gcc aag gtg att ctc ctc 318  
Asp His Ala Gly Gly Asn Arg Ala Ser Arg Ala Lys Val Ile Leu Leu  
37 42 47 52  
acg ggg tac gcc cat tct agc ctg ccg gcc gag ctg gac tct ggg gcc 366  
Thr Gly Tyr Ala His Ser Ser Leu Pro Ala Glu Leu Asp Ser Gly Ala  
53 58 63 68  
tgc ggc ggc tcc agc ctc aac tca gag ggc aac agt ggt agt ggt gac 414  
Cys Gly Gly Ser Ser Leu Asn Ser Glu Gly Asn Ser Gly Ser Gly Asp  
69 74 79 84  
agt agc agc tat gac gca cca gct ggc aac tcc ttc cta gag gac tgc 462  
Ser Ser Ser Tyr Asp Ala Pro Ala Gly Asn Ser Phe Leu Glu Asp Cys  
85 90 95 100  
gaa ctc tcc cgg cag atc ggg gcg cag ctt aag ctg ctg cct atg aat 510  
Glu Leu Ser Arg Gln Ile Gly Ala Gln Leu Lys Leu Leu Pro Met Asn  
101 106 111 116

gat cag ata cgg gag cta cag acc atc atc cgg gac aag aca gcc agt	558
Asp Gln Ile Arg Glu Leu Gln Thr Ile Ile Arg Asp Lys Thr Ala Ser	
117 122 127 132	
aga ggt gac ttc atg ttt tct gcg gat cgt ttg atc aga ctt gtt gtg	606
Arg Gly Asp Phe Met Phe Ser Ala Asp Arg Leu Ile Arg Leu Val Val	
133 138 143 148	
gaa gag gga ttg aat cag ctg cca tat aaa gaa tgc atg gtg acc act	654
Glu Glu Gly Leu Asn Gln Leu Pro Tyr Lys Glu Cys Met Val Thr Thr	
149 154 159 164	
cca aca ggg tac aag tat gaa gga gtg aaa ttt gag aag gga aat tgt	702
Pro Thr Gly Tyr Lys Tyr Glu Gly Val Lys Phe Glu Lys Gly Asn Cys	
165 170 175 180	
ggg gtc agc ata atg aga agc ggt gag gca atg gaa caa ggt tta cga	750
Gly Val Ser Ile Met Arg Ser Gly Glu Ala Met Glu Gln Gly Leu Arg	
181 186 191 196	
gac tgc tgt cga tcc ata cga att gga aag atc ctg att cag agt gat	798
Asp Cys Cys Arg Ser Ile Arg Ile Gly Lys Ile Leu Ile Gln Ser Asp	
197 202 207 212	
gag gag aca caa aga gcc aaa gta tat tat gcc aaa ttc ccc cca gac	846
Glu Glu Thr Gln Arg Ala Lys Val Tyr Tyr Ala Lys Phe Pro Pro Asp	
213 218 223 228	
att tac cgg aga aaa gtc ctt ctg atg tat cca att ctc agc act gga	894
Ile Tyr Arg Arg Lys Val Leu Leu Met Tyr Pro Ile Leu Ser Thr Gly	
229 234 239 244	
aat act gta att gaa gct gta aag gtt ctt ata gaa cat gga gtt caa	942
Asn Thr Val Ile Glu Ala Val Lys Val Leu Ile Glu His Gly Val Gln	
245 250 255 260	
ccc agt gtt atc atc cta ctc agt ctg ttc tcc act cct cat ggt gcc	990
Pro Ser Val Ile Ile Leu Leu Ser Leu Phe Ser Thr Pro His Gly Ala	
261 266 271 276	
aaa tca atc att cag gag ttt cca gag atc aca att tta act act gaa	1038
Lys Ser Ile Ile Gln Glu Phe Pro Glu Ile Thr Ile Leu Thr Thr Glu	
277 282 287 292	
gtt cat cct gtt gca cct aca cat ttt gga cag aaa tac ttt gga aca	1086
Val His Pro Val Ala Pro Thr His Phe Gly Gln Lys Tyr Phe Gly Thr	
293 298 303 308	
gac taa gttatttaag taaaataatt gtcttatgta atattacaat catgttttga	1142
Asp *	
309	
ttttctatatt gttttactga ttcacttgag ggtggcagag aaaaatgtgt taaaatgctt	1202
tttagttttg gaagtgggta tatttgaggt tatatctcat ttagttattt gtttactgtt	1262



ggcaccgaat tcaacaatga agtatatgca actottacaa aacataaatt ttaataatat 1322  
tctaatagcaa attactgaac cctcagtgca ttaaaattat ttcctaattt atgagcctct 1382  
tagtttggag gttgcttgaa gccacaaata aaactcaaat gagagtcagt tctttgtccc 1442  
actgtagttt gcattttggt tagtttgggt ttagctctac taaggtttca catatgtggc 1502  
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1 5 10  
cag tta gtg ctg tgc tca gag gat gat cga ctt ccc gtg att cag ctg 97  
Gln Leu Val Leu Cys Ser Glu Asp Asp Arg Leu Pro Val Ile Gln Leu  
15 20 25 30  
tgg gac ttg cgc ttt gcc tcc tcg ccc ttg aag gtg ctg gag agc cac 145  
Trp Asp Leu Arg Phe Ala Ser Ser Pro Leu Lys Val Leu Glu Ser His  
31 36 41 46  
agc agg ggg atc ttg tca gtg tca tgg agc cag gct gat gct gag ctg 193  
Ser Arg Gly Ile Leu Ser Val Ser Trp Ser Gln Ala Asp Ala Glu Leu  
47 52 57 62  
ctg ctc act agt gct aag gac agc cag atc ttg tgc cgg aac ctg ggg 241  
Leu Leu Thr Ser Ala Lys Asp Ser Gln Ile Leu Cys Arg Asn Leu Gly  
63 68 73 78  
agc agt gag gtg gta tat aag cta cca aca cag agc agc tgg tgc ttt 289  
Ser Ser Glu Val Val Tyr Lys Leu Pro Thr Gln Ser Ser Trp Cys Phe  
79 84 89 94  
gat gtg cag tgg tgc cct cgg gac cct tca gtg ttc tct gct gcc tcc 337  
Asp Val Gln Trp Cys Pro Arg Asp Pro Ser Val Phe Ser Ala Ala Ser  
95 100 105 110  
ttc aac ggc tgg atc agt ttg tac tct gtg atg ggt agg agc tgg gaa 385  
Phe Asn Gly Trp Ile Ser Leu Tyr Ser Val Met Gly Arg Ser Trp Glu  
111 116 121 126

gtc cag cat atg aga cag gct gac aag atc tcc tct tcc ttc agc aaa	433
Val Gln His Met Arg Gln Ala Asp Lys Ile Ser Ser Ser Phe Ser Lys	
127 132 137 142	
ggc cag cct ctc cca cca ctg cag gtg cca gag caa gtg gca caa gca	481
Gly Gln Pro Leu Pro Pro Leu Gln Val Pro Glu Gln Val Ala Gln Ala	
143 148 153 158	
cca ctg ata cct ccc ctg aaa aaa ccc ccc aaa tgg att aga aga cca	529
Pro Leu Ile Pro Pro Leu Lys Lys Pro Pro Lys Trp Ile Arg Arg Pro	
159 164 169 174	
aca ggt gtt tca ttt gct ttt gga ggg aag ctg gtt act ttt ggc ctc	577
Thr Gly Val Ser Phe Ala Phe Gly Gly Lys Leu Val Thr Phe Gly Leu	
175 180 185 190	
ccc agc acc cct gcc cat ctg gtg cca cag cct tgc ccc cgc cta gtc	625
Pro Ser Thr Pro Ala His Leu Val Pro Gln Pro Cys Pro Arg Leu Val	
191 196 201 206	
ttc atc agt caa gtc acc aca gaa tct gaa ttc ctg atg cga tca gct	673
Phe Ile Ser Gln Val Thr Thr Glu Ser Glu Phe Leu Met Arg Ser Ala	
207 212 217 222	
gag ctg cag gag gcc ttg gga tca gga aat cta ctg aat tac tgt cag	721
Glu Leu Gln Glu Ala Leu Gly Ser Gly Asn Leu Leu Asn Tyr Cys Gln	
223 228 233 238	
aac aag agc cag caa gct tta ctg caa agt gaa aag atg ctg tgg cag	769
Asn Lys Ser Gln Gln Ala Leu Leu Gln Ser Glu Lys Met Leu Trp Gln	
239 244 249 254	
ttc ctg aag gtg acc tta gag caa gac tcc aga atg aaa ttc cta aag	817
Phe Leu Lys Val Thr Leu Glu Gln Asp Ser Arg Met Lys Phe Leu Lys	
255 260 265 270	
ctt tta gga tac agt aaa gat gag ctt cag aag aag gtg gcc aca tgg	865
Leu Leu Gly Tyr Ser Lys Asp Glu Leu Gln Lys Lys Val Ala Thr Trp	
271 276 281 286	
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Leu Lys Ser Asp Val Gly Leu Gly Glu Ser Pro Gln Pro Lys Gly Asn	
287 292 297 302	
gac ctc aac agt gac aga caa cag gcc ttc tgc agc cag gcc tcc aaa	961
Asp Leu Asn Ser Asp Arg Gln Gln Ala Phe Cys Ser Gln Ala Ser Lys	
303 308 313 318	
cac acc aca aag gaa gcc tct gct tcc tca gcc ttc ttt gat gag ctg	1009
His Thr Thr Lys Glu Ala Ser Ala Ser Ser Ala Phe Phe Asp Glu Leu	
319 324 329 334	
gtc cct cag aac atg act cct tgg gag atc ccc atc aca aaa gat att	1057
Val Pro Gln Asn Met Thr Pro Trp Glu Ile Pro Ile Thr Lys Asp Ile	
335 340 345 350	
gat gga ctc cta agc cag gct ctc ctg ctt ggg gaa ctg ggt ccg gcc	1105

Asp Gly Leu Leu Ser Gln Ala Leu Leu Leu Gly Glu Leu Gly Pro Ala	
351 356 361 366	
gtg gag ctg tgt ctg aag gag gag cgc ttt gct gat gcc att atc ctg	1153
Val Glu Leu Cys Leu Lys Glu Glu Arg Phe Ala Asp Ala Ile Ile Leu	
367 372 377 382	
gcc cag gct ggg ggt aca gat ctg ctg aag caa aca cag gag cgc tac	1201
Ala Gln Ala Gly Gly Thr Asp Leu Leu Lys Gln Thr Gln Glu Arg Tyr	
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Leu Ala Lys Lys Lys Thr Lys Ile Ser Ser Leu Leu Ala Cys Val Val	
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Gln Lys Asn Trp Lys Asp Val Val Cys Thr Cys Ser Leu Lys Asn Trp	
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Pro Glu Leu Cys Asp Met Leu Gly Thr Arg Met Glu Gln Glu Gly Arg	
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Gly Ala Thr Leu His Ser Lys Glu Thr Ser Ser Tyr Arg Leu Gly Ser				
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cag cct tct cac cag gtc cca act cca tct cca agg cca agg gtt ttc				1873
Gln Pro Ser His Gln Val Pro Thr Pro Ser Pro Arg Pro Arg Val Phe				
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Asn Pro Val Gly Phe Pro Gly Thr Trp Pro Leu Pro Gly Ser Pro Leu				
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Glu Thr Pro Arg Leu Phe Pro Leu Leu Pro Leu Arg Pro Leu Gly Pro				
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His Leu Pro Pro Glu Lys Met Glu Arg Lys Glu Leu Pro Pro Glu His	
847 852 857 862	
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Ile Ile Ala His Lys Leu Leu Val *	
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Ile Leu Phe Leu Val Ala Ala Ala Thr Gly Thr His Ala Gln Val Gln  
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Asp Val Phe Pro Ile	Ile Ser Gly Cys Arg	His Pro Lys Asp Asn Ser		
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Gln Glu Glu Arg Glu	Thr Lys Thr Pro Glu	Cys Pro Ser His Thr Gln		
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Glu Asn Arg Cys Leu Lys Ala Asn Ala Lys Ser Cys Gly Glu Cys Ile	
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Gln Ala Gly Pro Asn Cys Gly Trp Cys Thr Asn Ser Thr Phe Leu Gln	
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Glu Gly Met Pro Thr Ser Ala Arg Cys Asp Asp Leu Glu Ala Leu Lys	
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Lys Lys Gly Cys Pro Pro Asp Asp Ile Glu Asn Pro Arg Gly Ser Lys	
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Asp Ile Lys Lys Asn Lys Asn Val Thr Asn Arg Ser Lys Gly Thr Ala	
88 93 98 103	
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Glu Lys Leu Lys Pro Glu Asp Ile Thr Gln Ile Gln Pro Gln Gln Leu	
104 109 114 119	
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Val Leu Arg Leu Arg Ser Gly Glu Pro Gln Thr Phe Thr Leu Lys Phe	
120 125 130 135	
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Lys Arg Ala Glu Asp Tyr Pro Ile Asp Leu Tyr Tyr Leu Met Asp Leu	
136 141 146 151	
tct tac tca atg aaa gac gat ttg gag aat gta aaa agt ctt gga aca	652
Ser Tyr Ser Met Lys Asp Asp Leu Glu Asn Val Lys Ser Leu Gly Thr	
152 157 162 167	
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Asp Leu Met Asn Glu Met Arg Arg Ile Thr Ser Asp Phe Arg Ile Gly	
168 173 178 183	
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Phe Gly Ser Phe Val Glu Lys Thr Val Met Pro Tyr Ile Ser Thr Thr	
184 189 194 199	

cca gct aag ctc agg aac cct tgc aca agt gaa cag aac tgc acc agc	796
Pro Ala Lys Leu Arg Asn Pro Cys Thr Ser Glu Gln Asn Cys Thr Ser	
200 205 210 215	
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Pro Phe Ser Tyr Lys Asn Val Leu Ser Leu Thr Asn Lys Gly Glu Val	
216 221 226 231	
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Phe Asn Glu Leu Val Gly Lys Gln Arg Ile Ser Gly Asn Leu Asp Ser	
232 237 242 247	
cca gaa ggt ggt ttc gat gcc atc atg caa gtt gca gtt tgt gga tca	940
Pro Glu Gly Gly Phe Asp Ala Ile Met Gln Val Ala Val Cys Gly Ser	
248 253 258 263	
ctg att ggc tgg agg aat gtt aca cgg ctg ctg gtg ttt tcc aca gat	988
Leu Ile Gly Trp Arg Asn Val Thr Arg Leu Leu Val Phe Ser Thr Asp	
264 269 274 279	
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Ala Gly Phe His Phe Ala Gly Asp Gly Lys Leu Gly Gly Ile Val Leu	
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His Tyr Tyr Asp Tyr Pro Ser Ile Ala His Leu Val Gln Lys Leu Ser	
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Leu Ser Ala Asn Ser Ser Asn Val Ile Gln Leu Ile Ile Asp Ala Tyr	
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Thr Gly Glu Asn Gly Arg Lys Cys Ser Asn Ile Ser Ile Gly Asp Glu	
408 413 418 423	
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Val Gln Phe Glu Ile Ser Ile Thr Ser Asn Lys Cys Pro Lys Lys Asp	
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Ser Asp Ser Phe Lys Ile Arg Pro Leu Gly Phe Thr Glu Glu Val Glu	
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Val Ile Leu Gln Tyr Ile Cys Glu Cys Glu Cys Gln Ser Glu Gly Ile	
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Ala Cys Arg Cys Asn Glu Gly Arg Val Gly Arg His Cys Glu Cys Ser	
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Thr Asp Glu Val Asn Ser Glu Asp Met Asp Ala Tyr Cys Arg Lys Glu	
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Asn Ser Ser Glu Ile Cys Ser Asn Asn Gly Glu Cys Val Cys Gly Gln	
520 525 530 535	
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Cys Val Cys Arg Lys Arg Asp Asn Thr Asn Glu Ile Tyr Ser Gly Lys	
536 541 546 551	
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Phe Cys Glu Cys Asp Asn Phe Asn Cys Asp Arg Ser Asn Gly Leu Ile	
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Cys Gly Gly Asn Gly Val Cys Lys Cys Arg Val Cys Glu Cys Asn Pro	
568 573 578 583	
aac tac act ggc agt gca tgt gac tgt tct ttg gat act agt act tgt	1948
Asn Tyr Thr Gly Ser Ala Cys Asp Cys Ser Leu Asp Thr Ser Thr Cys	
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Gly Val Cys Lys Cys Thr Asp Pro Lys Phe Gln Gly Gln Thr Cys Glu	
616 621 626 631	
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Met Cys Gln Thr Cys Leu Gly Val Cys Ala Glu His Lys Glu Cys Val	
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Gln Cys Arg Ala Phe Asn Lys Gly Glu Lys Lys Asp Thr Cys Thr Gln	

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Pro Gln Pro Val Gln Pro Asp Pro Val Ser His Cys Lys Glu Lys Asp				
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Val Asp Asp Cys Trp Phe Tyr Phe Thr Tyr Ser Val Asn Gly Asn Asn				
696	701	706	711	
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Glu Val Met Val His Val Val Glu Asn Pro Glu Cys Pro Thr Gly Pro				
712	717	722	727	
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Asp Ile Ile Pro Ile Val Ala Gly Val Val Ala Gly Ile Val Leu Ile				
728	733	738	743	
ggc ctt gca tta ctg ctg ata tgg aag ctt tta atg ata att cat gac				2428
Gly Leu Ala Leu Leu Leu Ile Trp Lys Leu Leu Met Ile Ile His Asp				
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760	765	770	775	
gac acg ggt gaa aat cct att tat aag agt gcc gta aca act gtg gtc				2524
Asp Thr Gly Glu Asn Pro Ile Tyr Lys Ser Ala Val Thr Thr Val Val				
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Asn Pro Lys Tyr Glu Gly Lys *				
792	797			
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<223> n = a,t,c or g

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tagttcgta gtcaaaacgt gaaaaaaaag acctgctttg ccttgggaaa tagtaaccct 180
gccaaataca tcagcttgta ggagacagag gatgtg atg gag ctg ctt gaa gaa 234
Met Glu Leu Leu Glu Glu
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gat ctc aca tgc cct att tgt tgt agt ctg ttt gat gat cca cgg gtt 282
Asp Leu Thr Cys Pro Ile Cys Cys Ser Leu Phe Asp Asp Pro Arg Val
7 12 17 22
ttg cct tgc tcc cac aac ttc tgc aaa aaa tgc tta gaa ggt atc tta 330
Leu Pro Cys Ser His Asn Phe Cys Lys Lys Cys Leu Glu Gly Ile Leu
23 28 33 38

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gaa ggg agt gtg cgg aat tcc ttg tgg aga cca gct cca ttc aag tgt	378
Glu Gly Ser Val Arg Asn Ser Leu Trp Arg Pro Ala Pro Phe Lys Cys	
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cct aca tgc cgt aag gaa act tca gct act gga att aat agc ctg cag	426
Pro Thr Cys Arg Lys Glu Thr Ser Ala Thr Gly Ile Asn Ser Leu Gln	
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Val Asn Tyr Ser Leu Lys Gly Ile Val Glu Lys Tyr Asn Lys Ile Lys	
71 76 81 86	
atc tct ccc aaa atg cca gta tgc aaa gga cac ttg ggg cag cct ctc	522
Ile Ser Pro Lys Met Pro Val Cys Lys Gly His Leu Gly Gln Pro Leu	
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aac att ttc tgc ctg act gat atg cag ctg att tgt ggg atc tgt gct	570
Asn Ile Phe Cys Leu Thr Asp Met Gln Leu Ile Cys Gly Ile Cys Ala	
103 108 113 118	
act cgt ggg gag cac acc aaa cat gtc ttc tgt tct att gaa gat gcc	618
Thr Arg Gly Glu His Thr Lys His Val Phe Cys Ser Ile Glu Asp Ala	
119 124 129 134	
tat gct cag gaa agg gat gcc ttt gag tcc ctc ttc cag agc ttt gag	666
Tyr Ala Gln Glu Arg Asp Ala Phe Glu Ser Leu Phe Gln Ser Phe Glu	
135 140 145 150	
acc tgg cgt cgg gga gat gct ctt tct cgc ttg gat acc ttg gaa act	714
Thr Trp Arg Arg Gly Asp Ala Leu Ser Arg Leu Asp Thr Leu Glu Thr	
151 156 161 166	
agt aag agg aaa tcc cta cag tta ctg act aaa gat tca gat aaa gtg	762
Ser Lys Arg Lys Ser Leu Gln Leu Leu Thr Lys Asp Ser Asp Lys Val	
167 172 177 182	
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Lys Glu Phe Phe Glu Lys Leu Gln His Thr Leu Asp Gln Lys Lys Asn	
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Glu Ile Leu Ser Asp Phe Glu Thr Met Lys Leu Ala Val Met Gln Ala	
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Tyr Asp Pro Glu Ile Asn Lys Leu Asn Thr Ile Leu Gln Glu Gln Arg	
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Met Ala Phe Asn Ile Ala Glu Ala Phe Lys Asp Val Ser Glu Pro Ile	
231 236 241 246	
gta ttt ctg caa cag atg cag gag ttt aga gag aaa atc aaa gta atc	1002
Val Phe Leu Gln Gln Met Gln Glu Phe Arg Glu Lys Ile Lys Val Ile	
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Lys Glu Thr Pro Leu Pro Pro Ser Asn Leu Pro Ala Ser Pro Leu Met	
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Lys Asn Phe Asp Thr Ser Gln Trp Glu Asp Ile Lys Leu Val Asp Val	
279 284 289 294	
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295 300 305 310	
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Pro Trp Ser Phe Tyr Lys Leu Phe Leu Leu Ile Leu Leu Leu Gly Leu	
311 316 321 326	
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Val Ile Val Phe Gly Pro Thr Met Phe Leu Glu Trp Ser Leu Phe Asp	
327 332 337 342	
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343 348 353 358	
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Thr Lys Thr Ala Asp Phe Ile Glu Gln Ser Val Phe Tyr Trp Glu Gln	
359 364 369 374	
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Val Thr Asp Gly Phe Phe Ile Phe Asn Glu Arg Phe Lys Asn Phe Thr	
375 380 385 390	
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Leu Val Val Leu Asn Asn Val Ala Glu Phe Val Cys Lys Tyr Lys Leu	
391 396 401 406	
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Leu *	
407	
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Arg Val His Leu Gln Cys Arg Asn Leu Gln Glu Phe Leu Gly Gly Leu
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agc cct ggg gta ttg gac cga ttg tat ggg cac cct gcc aca tgt ctg 388
Ser Pro Gly Val Leu Asp Arg Leu Tyr Gly His Pro Ala Thr Cys Leu
  27                      32                      37                      42

gct gtc ttc agg gag ctc cca tcc ttg gct aag aac tgg gtg atg cgg 436
Ala Val Phe Arg Glu Leu Pro Ser Leu Ala Lys Asn Trp Val Met Arg
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atg ctc ttt ctg gag cag cct ttg oca cag gct gct gta gct ctg tgg 484
Met Leu Phe Leu Glu Gln Pro Leu Pro Gln Ala Ala Val Ala Leu Trp
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gta aag aag gaa ttc agc aag gct cag gag gaa agt aca ggg ctg ctg 532
Val Lys Lys Glu Phe Ser Lys Ala Gln Glu Glu Ser Thr Gly Leu Leu
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agc ggc ctc cgg atc tgg cac acc cag ctg ctc cca ggc ggg ctc cag 580
Ser Gly Leu Arg Ile Trp His Thr Gln Leu Leu Pro Gly Gly Leu Gln
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ggc ctc atc ctc aac ccc att ttc cgc cag aac ctc cgc att gcc ctt 628
Gly Leu Ile Leu Asn Pro Ile Phe Arg Gln Asn Leu Arg Ile Ala Leu
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ctg ggt ggg ggg aag gcc tgg tct gat gac aca agt cag ctg gga cca 676
Leu Gly Gly Gly Lys Ala Trp Ser Asp Asp Thr Ser Gln Leu Gly Pro
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gac aag cat gcc cgg gac gtt ccc tcc ctt gac aag tac gcc gag gag 724
Asp Lys His Ala Arg Asp Val Pro Ser Leu Asp Lys Tyr Ala Glu Glu
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171	176	181	186	
agt act gaa cct gga gag ccg ccc tgc att act tcc gct ggc ttc cag				868
Ser Thr Glu Pro Gly Glu Pro Pro Cys Ile Thr Ser Ala Gly Phe Gln				
187	192	197	202	
ttc ctg ttg ctg gac acc ccg gct cag ctc tgg tac ttt atg ttg cag				916
Phe Leu Leu Leu Asp Thr Pro Ala Gln Leu Trp Tyr Phe Met Leu Gln				
203	208	213	218	
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Tyr Leu Gln Thr Ala Gln Ser Arg Gly Met Asp Leu Val Glu Ile Leu				
219	224	229	234	
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Val Glu Gly Met Ser Asp Ser Leu Leu Asn Phe Leu Gln His Leu Arg				
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gag ttt ggg ctt gtt ttc cag agg aag agg aaa tct cgg cgt tac tac				1108
Glu Phe Gly Leu Val Phe Gln Arg Lys Arg Lys Ser Arg Arg Tyr Tyr				
267	272	277	282	
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283	288	293	298	
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299	304	309	314	
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347	352	357	362	
cag ata atc cat ttc cta agg aca aga gcc cac cca gtg atg ctc aaa				1396
Gln Ile Ile His Phe Leu Arg Thr Arg Ala His Pro Val Met Leu Lys				
363	368	373	378	
cag aca cct gtg ctg ccc ccc acc atc acc gac cag atc cgg ctc tgg				1444
Gln Thr Pro Val Leu Pro Pro Thr Ile Thr Asp Gln Ile Arg Leu Trp				
379	384	389	394	

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 395 400 405 410

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 411 416 421 426

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 427 432 437 442

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 Val Thr Pro Ala Gly His Ser Asp Val Lys Arg Phe Trp Lys Arg Gln  
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aaa cat agc tcc tga gagcgcggga cttggacacg gacctcggcg ggcgggagct 1691  
 Lys His Ser Ser \*  
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 Ala Thr Gln Gly Leu Gly Ser Asn Gln Asn Ala Leu Lys Tyr Leu Gly  
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cag gat ttc aag acc ctg agg caa cag tgc ttg gac tca ggg gtc cta 145  
 Gln Asp Phe Lys Thr Leu Arg Gln Gln Cys Leu Asp Ser Gly Val Leu  
 30 35 40 45

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 Phe Lys Asp Pro Glu Phe Pro Ala Cys Pro Ser Ala Leu Gly Tyr Lys  
 46 51 56 61

gat ctt gga cca ggc tct ccg caa act caa ggc atc atc tgg aag cgg 241  
 Asp Leu Gly Pro Gly Ser Pro Gln Thr Gln Gly Ile Ile Trp Lys Arg  
 62 67 72 77

ccc acg gag ttg tgt ccc agc cct cag ttt atc gtt ggt gga gcc acg	289
Pro Thr Glu Leu Cys Pro Ser Pro Gln Phe Ile Val Gly Gly Ala Thr	
78 83 88 93	
cgc aca gac att tgt cag ggt ggt cta ggt gac tgc tgg ctt ctg gct	337
Arg Thr Asp Ile Cys Gln Gly Gly Leu Gly Asp Cys Trp Leu Leu Ala	
94 99 104 109	
gcc att gcc tcc ctg acc ctg aat gaa gag ctg ctt tac cgg gtg gtc	385
Ala Ile Ala Ser Leu Thr Leu Asn Glu Glu Leu Leu Tyr Arg Val Val	
110 115 120 125	
ccc agg gac cag gac ttc cag gag aac tat gcg gga atc ttt cac ttt	433
Pro Arg Asp Gln Asp Phe Gln Glu Asn Tyr Ala Gly Ile Phe His Phe	
126 131 136 141	
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Gln Phe Trp Gln Tyr Gly Glu Trp Val Glu Val Val Ile Asp Asp Arg	
142 147 152 157	
ctg ccc acc aag aat gga cag ctg ctc ttc cta cac tcg gaa caa ggc	529
Leu Pro Thr Lys Asn Gly Gln Leu Leu Phe Leu His Ser Glu Gln Gly	
158 163 168 173	
aat gaa ttc tgg agt gcc ctg ctg gag aaa gcc tat gcc aag ctt aat	577
Asn Glu Phe Trp Ser Ala Leu Leu Glu Lys Ala Tyr Ala Lys Leu Asn	
174 179 184 189	
ggt tgt tat gag gct ctc gct gga ggt tcc aca gtg gag ggg ttt gag	625
Gly Cys Tyr Glu Ala Leu Ala Gly Gly Ser Thr Val Glu Gly Phe Glu	
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gat ttc aca ggt ggc atc tct gag ttt tat gac ctg aag aaa cca cca	673
Asp Phe Thr Gly Gly Ile Ser Glu Phe Tyr Asp Leu Lys Lys Pro Pro	
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Ala Asn Leu Tyr Gln Ile Ile Arg Lys Ala Leu Cys Ala Gly Ser Leu	
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Leu Gly Cys Ser Ile Asp Val Tyr Ser Ala Ala Glu Ala Glu Ala Ile	
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Thr Ser Gln Lys Leu Val Lys Ser His Ala Tyr Ser Val Thr Gly Val	
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Glu Glu Val Asn Phe Gln Gly His Pro Glu Lys Leu Ile Arg Leu Arg	
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Asn Pro Trp Gly Glu Val Glu Trp Ser Gly Ala Trp Ser Asp Glu *	
286 291 296 301	



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Asp Ile Leu Ile Pro Glu Phe Leu Lys Ser Gly His Pro Ser Asn Leu	
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Thr Cys Ser Val Pro Trp Val Cys Glu Gln Gly Thr Pro Pro Ile Phe	
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Ser Trp Met Ser Ala Ala Pro Thr Ser Leu Gly Pro Arg Thr Leu His	
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Ser Ser Val Leu Thr Ile Ile Pro Arg Pro Gln Asp His Gly Thr Asn	
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Leu Ile Cys Gln Val Thr Phe Pro Gly Ala Gly Val Thr Thr Glu Arg	
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Val Val Leu Ala Val Gly Val Val Ala Val Lys Ile Leu Leu Leu Cys	
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Leu Cys Leu Ile Ile Leu Ser Phe His Lys Lys Lys Ala Val Arg Ala	
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Val Glu Val Glu Glu Asn Val Tyr Ala Val Met Gly *	
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 cgggtcgggg gcctttaaga ggcgcggtcg ccgggaccga cacagacgcg gacagcgccg 180  
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 cctccgcag cg atg gac gga gac ggt gac cca gag agc gtg ggc cag 288  
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                   1                  5                  10  
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 Pro Glu Glu Ala Ser Pro Glu Glu Gln Pro Glu Glu Ala Ser Ala Glu  
 13                  18                  23                  28  
 gag gag cgg ccg gag gac cag cag gag gag gag gcg gcc gcc gcc gcg 384  
 Glu Glu Arg Pro Glu Asp Gln Gln Glu Glu Glu Ala Ala Ala Ala Ala  
 29                  34                  39                  44  
 tac ctg gac gag ctg ccc gag ccg ctg ctg ctg cgc gtg ctg gcc gca 432  
 Tyr Leu Asp Glu Leu Pro Glu Pro Leu Leu Leu Arg Val Leu Ala Ala  
 45                  50                  55                  60  
 ctg ccg gcc gcc gag ctg gtg cag gcc tgc cgc ctg gtg tgc ctg cgc 480  
 Leu Pro Ala Ala Glu Leu Val Gln Ala Cys Arg Leu Val Cys Leu Arg  
 61                  66                  71                  76  
 tgg aag gag ctg gtg gac ggc gcc ccg ctg tgg ctg ctc aag tgc cag 528  
 Trp Lys Glu Leu Val Asp Gly Ala Pro Leu Trp Leu Leu Lys Cys Gln  
 77                  82                  87                  92  
 cag gag ggg ctg gtg ccc gag ggc ggc gtg gag gag gag cgc gac cac 576  
 Gln Glu Gly Leu Val Pro Glu Gly Gly Val Glu Glu Glu Arg Asp His  
 93                  98                  103                  108  
 tgg cag cag ttc tac ttc ctg agc aag cgg cgc cgc aac ctt ctg cgt 624  
 Trp Gln Gln Phe Tyr Phe Leu Ser Lys Arg Arg Arg Asn Leu Leu Arg  
 109                  114                  119                  124  
 aac ccg tgt ggg gaa gag gac ttg gaa ggc tgg tgt gac gtg gag cat 672  
 Asn Pro Cys Gly Glu Glu Asp Leu Glu Gly Trp Cys Asp Val Glu His  
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Gly Gly Asp Gly Trp Arg Val Glu Glu Leu Pro Gly Asp Ser Gly Val	
141 146 151 156	
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157 162 167 172	
gag tgg tgt cgc aaa gca cag gtc att gac ctg cag gct gag ggc tac	816
Glu Trp Cys Arg Lys Ala Gln Val Ile Asp Leu Gln Ala Glu Gly Tyr	
173 178 183 188	
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Trp Glu Glu Leu Leu Asp Thr Thr Gln Pro Ala Ile Val Val Lys Asp	
189 194 199 204	
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Trp Tyr Ser Gly Arg Ser Asp Ala Gly Cys Leu Tyr Glu Leu Thr Val	
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Lys Leu Leu Ser Glu His Glu Asn Val Leu Ala Glu Phe Ser Ser Gly	
221 226 231 236	
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Gln Val Ala Val Pro Gln Asp Ser Asp Gly Gly Gly Trp Met Glu Ile	
237 242 247 252	
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Ser His Thr Phe Thr Asp Tyr Gly Pro Gly Val Arg Phe Val Arg Phe	
253 258 263 268	
gag cac ggg ggg cag gac tcc gtc tac tgg aag ggc tgg ttc ggg gcc	1104
Glu His Gly Gly Gln Asp Ser Val Tyr Trp Lys Gly Trp Phe Gly Ala	
269 274 279 284	
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Arg Val Thr Asn Ser Ser Val Trp Val Glu Pro *	
285 290 295	
gctctcccc agctgcctgg aggggcaaaag gtcgagggtg gataggcctt aacttagtcc	1214
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Met Ser Leu Ala Asp
1
gag ctc tta gct gat ctc gaa gag gca gca gaa gag gag gaa gga gga 462
Glu Leu Leu Ala Asp Leu Glu Glu Ala Ala Glu Glu Glu Glu Gly Gly
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Ser Tyr Gly Glu Glu Glu Glu Glu Pro Ala Ile Glu Asp Val Gln Glu
22 27 32 37
gag aca cag ctg gat ctt tcc ggg gat tca gtc aag acc atc gcc aag 558
Glu Thr Gln Leu Asp Leu Ser Gly Asp Ser Val Lys Thr Ile Ala Lys
38 43 48 53
cta tgg gat agt aag atg ttt gct gag att atg atg aag att gag gag 606
Leu Trp Asp Ser Lys Met Phe Ala Glu Ile Met Met Lys Ile Glu Glu
54 59 64 69
tat atc agc aag caa gcc aaa gct tca gaa gtg atg gga cca gtg gag 654
Tyr Ile Ser Lys Gln Ala Lys Ala Ser Glu Val Met Gly Pro Val Glu
70 75 80 85
gcc gcg cct gaa tac cgc gtc atc gtg gat gcc aac aac ctg acc gtg 702
Ala Ala Pro Glu Tyr Arg Val Ile Val Asp Ala Asn Asn Leu Thr Val
86 91 96 101
gag atc gaa aac gag ctg aac atc atc cat aag ttc atc cgg gat aag 750
Glu Ile Glu Asn Glu Leu Asn Ile Ile His Lys Phe Ile Arg Asp Lys
102 107 112 117
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Asp	Tyr	Ile	Arg	Thr	Val	Lys	Glu	Leu	Gly	Asn	Ser	Leu	Asp	Lys	Cys		
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Lys	Asn	Asn	Glu	Asn	Leu	Gln	Gln	Ile	Leu	Thr	Asn	Ala	Thr	Ile	Met		
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Val	Val	Ser	Val	Thr	Ala	Ser	Thr	Thr	Gln	Gly	Gln	Gln	Leu	Ser	Glu		
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Glu	Glu	Leu	Glu	Arg	Leu	Glu	Glu	Ala	Cys	Asp	Met	Ala	Leu	Glu	Leu		
182					187					192					197		
aac	gcc	tcc	aag	cac	cgc	atc	tac	gag	tat	gtg	gag	tcc	cgg	atg	tcc	1038	
Asn	Ala	Ser	Lys	His	Arg	Ile	Tyr	Glu	Tyr	Val	Glu	Ser	Arg	Met	Ser		
198					203					208					213		
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Phe	Ile	Ala	Pro	Asn	Leu	Ser	Ile	Ile	Ile	Gly	Ala	Ser	Thr	Ala	Ala		
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aag	atc	atg	ggc	gtg	gcc	ggc	ggc	ctg	acc	aac	ctc	tcc	aag	atg	ccc	1134	
Lys	Ile	Met	Gly	Val	Ala	Gly	Gly	Leu	Thr	Asn	Leu	Ser	Lys	Met	Pro		
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Phe	Ser	Ser	Thr	Ser	Val	Leu	Pro	His	Thr	Gly	Tyr	Ile	Tyr	His	Ser		
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Asp	Ile	Val	Gln	Ser	Leu	Pro	Pro	Asp	Leu	Arg	Arg	Lys	Ala	Ala	Arg		
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Leu	Val	Ala	Ala	Lys	Cys	Thr	Leu	Ala	Ala	Arg	Val	Asp	Ser	Phe	His		
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326					331					336					341		
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Pro	Leu	Pro	Ala	Pro	Leu	Asp	Gly	Gln	Arg	Lys	Lys	Arg	Gly	Gly	Arg		

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gag gac ctg gga ttc agc ctg ggc cac ctg ggc aag tcg ggc agt ggg				1614
Glu Asp Leu Gly Phe Ser Leu Gly His Leu Gly Lys Ser Gly Ser Gly				
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Phe Thr Pro Leu Gln Gly Leu Glu Ile Val Asn Pro Gln Ala Ala Glu				
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Lys Lys Val Ala Glu Ala Asn Gln Lys Tyr Phe Ser Ser Met Ala Glu				
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Glu Leu Leu Ala Asp Leu Glu Glu Ala Ala Glu Glu Glu Glu Gly Gly						
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Ser Tyr Gly Glu Glu Glu Glu Glu Pro Ala Ile Glu Asp Val Gln Glu						
22 27 32 37						
gag aca cag ctg gat ctt tcc ggg gat tca gtc aag acc atc gcc aag						558
Glu Thr Gln Leu Asp Leu Ser Gly Asp Ser Val Lys Thr Ile Ala Lys						
38 43 48 53						
cta tgg gat agt aag atg ttt gct gag att atg atg aag att gag gag						606
Leu Trp Asp Ser Lys Met Phe Ala Glu Ile Met Met Lys Ile Glu Glu						
54 59 64 69						
tat atc agc aag caa gcc aaa gct tca gaa gtg atg gga cca gtg gag						654
Tyr Ile Ser Lys Gln Ala Lys Ala Ser Glu Val Met Gly Pro Val Glu						
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gcc gcg cct gaa tac cgc gtc atc gtg gat gcc aac aac ctg acc gtg						702
Ala Ala Pro Glu Tyr Arg Val Ile Val Asp Ala Asn Asn Leu Thr Val						
86 91 96 101						
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Glu Ile Glu Asn Glu Leu Asn Ile Ile His Lys Phe Ile Arg Asp Lys						
102 107 112 117						
tac tca aag aga ttc cct gaa ctg gag tcc ttg gtc ccc aat gca ctg						798
Tyr Ser Lys Arg Phe Pro Glu Leu Glu Ser Leu Val Pro Asn Ala Leu						
118 123 128 133						

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1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054	2055	2056	2057	2058	2059	2060	2061	2062	2063	2064	2065	2066	2067	2068	2069	2070	2071	2072	2073	2074	2075	2076	2077	2078	2079	2080	2081	2082	2083	2084	2085	2086	2087	2088	2089	2090	2091	2092	2093	2094	2095	2096	2097	2098	2099	2100	

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Gln Ala Asn Arg Met Ser Phe Gly Glu Ile Glu Glu Asp Ala Tyr Gln	
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Glu Asp Leu Gly Phe Ser Leu Gly His Leu Gly Lys Ser Gly Ser Gly	
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cgt gtg cgg cag aca cag gta aac gag gcc acc aag gcc agg atc tcc	1662
Arg Val Arg Gln Thr Gln Val Asn Glu Ala Thr Lys Ala Arg Ile Ser	
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Lys Thr Leu Gln Val Trp Ala Arg Pro Arg Trp Gly Trp Glu Thr Glu	
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Ile Arg Asp Arg Ser Ser Gly Thr Ala Ser Ser Val Ala Phe Thr Pro	
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Leu Gln Gly Leu Glu Ile Val Asn Pro Gln Ala Ala Glu Lys Lys Val	
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gct gag gcc aac cag aag tat ttc tcc agc atg gct gag ttc ctc aag	1950
Ala Glu Ala Asn Gln Lys Tyr Phe Ser Ser Met Ala Glu Phe Leu Lys	
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Val Lys Gly Glu Lys Ser Gly Leu Met Ser Thr *	
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	Met
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Ala Ala Arg Lys Gly Arg Arg Arg Thr Cys Glu Thr Gly Glu Pro Met	
2 7 12 17	
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Glu Ala Glu Ser Gly Asp Thr Ser Ser Glu Gly Pro Ala Gln Val Tyr	
18 23 28 33	
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Leu Pro Gly Arg Gly Pro Pro Leu Arg Glu Gly Glu Glu Leu Val Met	
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Asp Glu Glu Ala Tyr Val Leu Tyr His Arg Ala Gln Thr Gly Ala Pro	
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Cys Leu Ser Phe Asp Ile Val Arg Asp His Leu Gly Asp Asn Arg Thr	
66 71 76 81	
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Glu Leu Pro Leu Thr Leu Tyr Leu Cys Ala Gly Thr Gln Ala Glu Ser	
82 87 92 97	
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Ala Gln Ser Asn Arg Leu Met Met Leu Arg Met His Asn Leu His Gly	
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Thr Lys Pro Pro Pro Ser Glu Gly Ser Asp Glu Glu Glu Glu Glu Glu	
114 119 124 129	
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Asp Glu Glu Asp Glu Glu Glu Arg Lys Pro Gln Leu Glu Leu Ala Met	
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Val Pro His Tyr Gly Gly Ile Asn Arg Val Arg Val Ser Trp Leu Gly	
146 151 156 161	
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Glu Glu Pro Val Ala Gly Val Trp Ser Glu Lys Gly Gln Val Glu Val	

162	167	172	177	
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Phe Ala Leu Arg Arg Leu Leu Gln Val Val Glu Glu Pro Gln Ala Leu				
178	183	188	193	
gca gcc ttc ctc cgg gat gag cag gcc caa atg aag ccc atc ttc tcc				741
Ala Ala Phe Leu Arg Asp Glu Gln Ala Gln Met Lys Pro Ile Phe Ser				
194	199	204	209	
ttc gct gga cac atg ggc gag ggc ttt gcc ctt gac tgg tcc ccc cgg				789
Phe Ala Gly His Met Gly Glu Gly Phe Ala Leu Asp Trp Ser Pro Arg				
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gtg acc ggt cgc ctg ctg acc ggt gac tgt caa aag aac atc cac ctc				837
Val Thr Gly Arg Leu Leu Thr Gly Asp Cys Gln Lys Asn Ile His Leu				
226	231	236	241	
tgg aca cct acg gac ggc ggc tcc tgg cac gtg gac cag cgg cca ttc				885
Trp Thr Pro Thr Asp Gly Gly Ser Trp His Val Asp Gln Arg Pro Phe				
242	247	252	257	
gtg ggc cac aca cgc tct gtg gag gac ctg cag tgg tca ccg act gag				933
Val Gly His Thr Arg Ser Val Glu Asp Leu Gln Trp Ser Pro Thr Glu				
258	263	268	273	
aac acg gtg ttt gcc tcc tgc tca gct gac gcc tcc atc cgc atc tgg				981
Asn Thr Val Phe Ala Ser Cys Ser Ala Asp Ala Ser Ile Arg Ile Trp				
274	279	284	289	
gac atc cgg gca gcc ccc agc aag gcc tgc atg ctc acc aca gcc acc				1029
Asp Ile Arg Ala Ala Pro Ser Lys Ala Cys Met Leu Thr Thr Ala Thr				
290	295	300	305	
gcc cat gat ggg gac gtc aat gtc atc agc tgg agc cgc cgg gag ccc				1077
Ala His Asp Gly Asp Val Asn Val Ile Ser Trp Ser Arg Arg Glu Pro				
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Phe Leu Leu Ser Gly Gly Asp Asp Gly Ala Leu Lys Ile Trp Asp Leu				
322	327	332	337	
cgg cag ttc aag tct ggt tcc cca gtg gcc acc ttc aag cag cac gtg				1173
Arg Gln Phe Lys Ser Gly Ser Pro Val Ala Thr Phe Lys Gln His Val				
338	343	348	353	
gcc ccc gtg acc tcc gtc gag tgg cac ccc cag gac agc ggg gtc ttt				1221
Ala Pro Val Thr Ser Val Glu Trp His Pro Gln Asp Ser Gly Val Phe				
354	359	364	369	
gca gcc tcg ggt gca gac cac cag atc aca cag tgg gac ctg gca gtg				1269
Ala Ala Ser Gly Ala Asp His Gln Ile Thr Gln Trp Asp Leu Ala Val				
370	375	380	385	
gag cgg gac cct gag gcg ggc gac gtg gag gcc gac ccc gga ctg gcc				1317
Glu Arg Asp Pro Glu Ala Gly Asp Val Glu Ala Asp Pro Gly Leu Ala				
386	391	396	401	



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Met Asn Leu Leu Pro Cys Asn Pro His Gly Asn Gly Leu  
1 5 10  
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Leu Tyr Ala Gly Phe Asn Gln Asp His Gly Cys Phe Ala Cys Gly Met  
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Glu Asn Gly Phe Arg Val Tyr Asn Thr Asp Pro Leu Lys Glu Lys Glu  
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Lys Gln Glu Phe Leu Glu Gly Gly Val Gly His Val Glu Met Leu Phe  
46 51 56 61  
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Arg Cys Asn Tyr Leu Ala Leu Val Gly Gly Gly Lys Lys Pro Lys Tyr  
62 67 72 77  
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Pro Pro Asn Lys Val Met Ile Trp Asp Asp Leu Lys Lys Lys Thr Val  
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Ile Glu Ile Glu Phe Ser Thr Glu Val Lys Ala Val Lys Leu Arg Arg  
94 99 104 109  
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Asp Arg Ile Val Val Val Leu Asp Ser Met Ile Lys Val Phe Thr Phe  
110 115 120 125  
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Thr His Asn Pro His Gln Leu His Val Phe Glu Thr Cys Tyr Asn Pro  
126 131 136 141  
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Lys Gly Leu Cys Val Leu Cys Pro Asn Ser Asn Asn Ser Leu Leu Ala  
142 147 152 157  
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Phe Pro Gly Thr His Thr Gly His Val Gln Leu Val Asp Leu Ala Ser  
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Thr Glu Lys Pro Pro Val Asp Ile Pro Ala His Glu Gly Val Leu Ser  
174 179 184 189  
tgc att gca ctc aac ctg cag gga aca aga att gca act gca tcc gag 746  
Cys Ile Ala Leu Asn Leu Gln Gly Thr Arg Ile Ala Thr Ala Ser Glu  
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Lys Gly Thr Leu Ile Arg Ile Phe Asp Thr Ser Ser Gly His Leu Ile

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Gln Glu Leu Arg Arg Gly Ser Gln Ala Ala Asn Ile Tyr Cys Ile Asn				
222	227	232	237	
ttc aat cag gat gcg tcc ctc atc tgc gta tcc agc gac cac ggc aca				890
Phe Asn Gln Asp Ala Ser Leu Ile Cys Val Ser Ser Asp His Gly Thr				
238	243	248	253	
gtg cat att ttt gca gct gaa gat cca aaa agg aat aaa cag tcc agt				938
Val His Ile Phe Ala Ala Glu Asp Pro Lys Arg Asn Lys Gln Ser Ser				
254	259	264	269	
ttg gcc tca gcc agt ttc ctt cca aaa tac ttc agt tcc aag tgg agt				986
Leu Ala Ser Ala Ser Phe Leu Pro Lys Tyr Phe Ser Ser Lys Trp Ser				
270	275	280	285	
ttc tcc aag ttt cag gtt ccc tca ggc tct ccg tgc att tgt gcc ttt				1034
Phe Ser Lys Phe Gln Val Pro Ser Gly Ser Pro Cys Ile Cys Ala Phe				
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Gly Thr Glu Pro Asn Ala Val Ile Ala Ile Cys Ala Asp Gly Ser Tyr				
302	307	312	317	
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Tyr Lys Phe Leu Phe Asn Pro Lys Gly Glu Cys Ile Arg Asp Val Tyr				
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Ala Gln Phe Leu Glu Met Thr Asp Asp Lys Leu *				
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tca cag ttg ttt gcc atg tat tgt ctc ctg ctc ttt tat aaa gta cta Ser Gln Leu Phe Ala Met Tyr Cys Leu Leu Leu Phe Tyr Lys Val Leu	1321

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Lys Glu Glu Leu Ser Pro Ile Gln Pro Val Gly Lys Phe Leu Cys Val				
236	241	246	251	
aag ctg gtg gtt ttt gtt tct ttt tgg caa gca gta gtt att gct ttg				1417
Lys Leu Val Val Phe Val Ser Phe Trp Gln Ala Val Val Ile Ala Leu				
252	257	262	267	
ttg gta aaa gtt ggc gtt att tct gaa aag cat acg tgg gaa tgg caa				1465
Leu Val Lys Val Gly Val Ile Ser Glu Lys His Thr Trp Glu Trp Gln				
268	273	278	283	
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Thr Val Glu Ala Val Ala Thr Gly Leu Gln Asp Phe Ile Ile Cys Ile				
284	289	294	299	
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Glu Met Phe Leu Ala Ala Ile Ala His His Tyr Thr Phe Ser Tyr Lys				
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cca tat gtc caa gaa gca gaa gag ggc tca tgc ttt gat tcc ttt ctt				1609
Pro Tyr Val Gln Glu Ala Glu Glu Gly Ser Cys Phe Asp Ser Phe Leu				
316	321	326	331	
gcc atg tgg gat gtc tca gat att aga gat gat att tct gaa caa gta				1657
Ala Met Trp Asp Val Ser Asp Ile Arg Asp Asp Ile Ser Glu Gln Val				
332	337	342	347	
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Arg His Val Gly Arg Thr Val Arg Gly His Pro Arg Lys Lys Leu Phe				
348	353	358	363	
ccc gag gat caa gat caa aat gaa cat aca agt tta tta tca tca tca				1753
Pro Glu Asp Gln Asp Gln Asn Glu His Thr Ser Leu Leu Ser Ser Ser				
364	369	374	379	
tca caa gat gca att tcc att gct tct tct atg cca cct tca ccc atg				1801
Ser Gln Asp Ala Ile Ser Ile Ala Ser Ser Met Pro Pro Ser Pro Met				
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Gly His Tyr Gln Gly Phe Gly His Thr Val Thr Pro Gln Thr Thr Pro				
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acc aca gct aag ata tct gat gaa atc ctt agt gat act ata gga gag				1897
Thr Thr Ala Lys Ile Ser Asp Glu Ile Leu Ser Asp Thr Ile Gly Glu				
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Lys Lys Glu Pro Ser Asp Lys Ser Val Asp Ser *				
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acagaccata aatgatggaa aatgtcaaca caaaaatagc tgaaagccag gtacaactac				2067



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Arg Leu Glu Lys Glu Asn Lys Glu Leu Arg Lys Leu Val Leu Gln Lys				
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Asp Asp Lys Gly Ile His His Arg Lys Leu Lys Lys Ser Leu Ile Asp				
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Gln Arg Pro Thr Arg Gln Thr Pro Ser Ser Ala Ala Leu Thr Ala Ala				
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Glu	Gly	Leu	Leu	Pro	Ala	Val	Lys	Val	Phe	Leu	Asp	Trp	Leu	Arg	Thr		
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aac	ccc	gac	ctc	atc	atc	gtg	tgt	gca	cag	agc	tct	caa	agt	ctg	tgg		2187
Asn	Pro	Asp	Leu	Ile	Ile	Val	Cys	Ala	Gln	Ser	Ser	Gln	Ser	Leu	Trp		
668					673					678					683		
aac	cgc	ctg	tct	gtg	ttg	ctg	aat	ctg	ttg	cct	gct	gct	ggt	gaa	ctc		2235
Asn	Arg	Leu	Ser	Val	Leu	Leu	Asn	Leu	Leu	Pro	Ala	Ala	Gly	Glu	Leu		
684					689					694					699		
cag	gag	tct	ggc	ctg	gcc	ttg	tgt	cct	gag	gtc	caa	gat	ctt	ctt	gaa		2283
Gln	Glu	Ser	Gly	Leu	Ala	Leu	Cys	Pro	Glu	Val	Gln	Asp	Leu	Leu	Glu		
700					705					710					715		
ggt	tgt	gaa	ctg	cct	gac	ctc	ccc	tct	agc	ctt	ctg	ctc	cca	gag	gac		2331
Gly	Cys	Glu	Leu	Pro	Asp	Leu	Pro	Ser	Ser	Leu	Leu	Leu	Pro	Glu	Asp		
716					721					726					731		
atg	gct	ctt	cgt	aac	ctg	ccc	ccg	ctc	cga	gct	gcc	cac	aga	cgc	ttt		2379
Met	Ala	Leu	Arg	Asn	Leu	Pro	Pro	Leu	Arg	Ala	Ala	His	Arg	Arg	Phe		
732					737					742					747		
aac	ttt	gac	acg	gat	cgg	ccc	ctg	ctc	agc	acc	tta	gag	gag	tca	gtg		2427
Asn	Phe	Asp	Thr	Asp	Arg	Pro	Leu	Leu	Ser	Thr	Leu	Glu	Glu	Ser	Val		
748					753					758					763		
gtg	cgc	atc	tgc	tgc	atc	cgc	agc	ttt	ggt	cat	ttc	atc	gcc	cgc	ctg		2475
Val	Arg	Ile	Cys	Cys	Ile	Arg	Ser	Phe	Gly	His	Phe	Ile	Ala	Arg	Leu		
764					769					774					779		
caa	ggc	agc	atc	ctg	cag	ttc	aac	cca	gag	ggt	ggc	atc	ttc	gtc	agc		2523
Gln	Gly	Ser	Ile	Leu	Gln	Phe	Asn	Pro	Glu	Val	Gly	Ile	Phe	Val	Ser		
780					785					790					795		
att	gcc	cag	tct	gag	cag	gag	agc	ctg	ctg	cag	cag	gcc	cag	gca	cag		2571
Ile	Ala	Gln	Ser	Glu	Gln	Glu	Ser	Leu	Leu	Gln	Gln	Ala	Gln	Ala	Gln		
796					801					806					811		
ttc	cga	atg	gca	cag	gag	gaa	gct	cgt	cgg	aac	agg	ctc	atg	aga	gac		2619
Phe	Arg	Met	Ala	Gln	Glu	Glu	Ala	Arg	Arg	Asn	Arg	Leu	Met	Arg	Asp		
812					817					822					827		
atg	gct	cag	cta	cga	ctt	cag	ctc	gaa	gtg	tct	cag	ctg	gag	ggc	agc		2667
Met	Ala	Gln	Leu	Arg	Leu	Gln	Leu	Glu	Val	Ser	Gln	Leu	Glu	Gly	Ser		
828					833					838					843		
ctg	cag	cag	ccc	aag	gcc	cag	tca	gcc	atg	tct	ccc	tac	ctc	gtc	cct		2715
Leu	Gln	Gln	Pro	Lys	Ala	Gln	Ser	Ala	Met	Ser	Pro	Tyr	Leu	Val	Pro		
844					849					854					859		
gac	acc	cag	gcc	ctc	tgc	cac	cat	ctc	cct	gtc	atc	cgc	caa	ctg	gcc		2763
Asp	Thr	Gln	Ala	Leu	Cys	His	His	Leu	Pro	Val	Ile	Arg	Gln	Leu	Ala		

860	865	870	875			
acc agt ggc cgc ttc	att gtc atc atc cca	agg aca gtg atc gat	ggc	2811		
Thr Ser Gly Arg Phe	Ile Val Ile Ile Pro	Arg Thr Val Ile Asp	Gly			
876	881	886	891			
ctg gat ttg ctg aag	aag gaa cac cca ggg	gcc cgg gat ggg att	cgg	2859		
Leu Asp Leu Leu Lys	Lys Glu His Pro Gly	Ala Arg Asp Gly Ile	Arg			
892	897	902	907			
tac ctg gag gca gag	ttt aaa aaa gga aac	agg tac att cgc tgc	cag	2907		
Tyr Leu Glu Ala Glu	Phe Lys Lys Gly Asn	Arg Tyr Ile Arg Cys	Gln			
908	913	918	923			
aaa gag gtg gga aag	agc ttt gag cgg cat	aag ctg aag agg cag	gat	2955		
Lys Glu Val Gly Lys	Ser Phe Glu Arg His	Lys Leu Lys Arg Gln	Asp			
924	929	934	939			
gca gat gcc tgg act	ctc tat aag atc cta	gac agc tgc aaa cag	ctg	3003		
Ala Asp Ala Trp Thr	Leu Tyr Lys Ile Leu	Asp Ser Cys Lys Gln	Leu			
940	945	950	955			
act ctg gcc cag ggg	gca ggt gag gag gat	ccg agt ggc atg gtg	acc	3051		
Thr Leu Ala Gln Gly	Ala Gly Glu Glu Asp	Pro Ser Gly Met Val	Thr			
956	961	966	971			
atc atc aca ggc ctt	cca ctg gac aac ccc	agc gtg ctt tca ggc	ccc	3099		
Ile Ile Thr Gly Leu	Pro Leu Asp Asn Pro	Ser Val Leu Ser Gly	Pro			
972	977	982	987			
atg cag gca gcc ctg	cag gcc gct gcc cac	gcc agt gtg gac atc	aag	3147		
Met Gln Ala Ala Leu	Gln Ala Ala Ala His	Ala Ser Val Asp Ile	Lys			
988	993	998	1003			
aat gtt ctg gac ttc	tac aag cag tgg aag	gaa att ggt tga tact	gac	3196		
Asn Val Leu Asp Phe	Tyr Lys Gln Trp Lys	Glu Ile Gly *				
1004	1009	1014				
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cagcacctgt	agtcacccca	ccacacgcag	actcatgcac	gcacacagga	gggaggccta	3316
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gccaagacgt	taggaaagcg	aggaaagtgc	ttggattagg	agagtottgt	gggcccctgg	3436
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tcgtgtgctc ctctctctgc tgcaggggct gcacatccca ttgccccact tctgctttgt 3856  
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tgtgggaggg tgcagccagg attgcctcag ctctccccc tcaggctggg aggatagcac 4336  
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<213> Homo sapiens

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Met Leu Ala Leu Arg Val Ala Arg Gly Ser Trp Gly  
1 5 10  
gcc ctg cgc ggc gcc gct tgg gct ccg gga acg cgg ccg agt aag cga 158  
Ala Leu Arg Gly Ala Ala Trp Ala Pro Gly Thr Arg Pro Ser Lys Arg  
13 18 23 28  
cgc gcc tgc tgg gcc ctg ctg ccg ccc gtg ccc tgc tgc ttg ggc tgc 206  
Arg Ala Cys Trp Ala Leu Leu Pro Pro Val Pro Cys Cys Leu Gly Cys  
29 34 39 44  
ctg gcc gaa cgc tgg agg ctg cgt ccg gcc gct ctt ggc ttg cgg ctg 254  
Leu Ala Glu Arg Trp Arg Leu Arg Pro Ala Ala Leu Gly Leu Arg Leu  
45 50 55 60

ccc ggg atc ggc cag cgg aac cac tgt tgc ggc gcg ggg aag gcg gct	302
Pro Gly Ile Gly Gln Arg Asn His Cys Ser Gly Ala Gly Lys Ala Ala	
61 66 71 76	
ccc agg cca gcg gcc gga gcg ggc gcc gct gcc gaa gcc ccg ggc ggc	350
Pro Arg Pro Ala Ala Gly Ala Gly Ala Ala Ala Glu Ala Pro Gly Gly	
77 82 87 92	
cag tgg ggc ccg gcg agc acc ccc agc ctg tat gaa aac cca tgg aca	398
Gln Trp Gly Pro Ala Ser Thr Pro Ser Leu Tyr Glu Asn Pro Trp Thr	
93 98 103 108	
atc ccg aat atg ttg tca atg acg aga att ggc ttg gcc cca gtt ctg	446
Ile Pro Asn Met Leu Ser Met Thr Arg Ile Gly Leu Ala Pro Val Leu	
109 114 119 124	
ggc tat ttg att att gaa gaa gat ttt aat att gca cta gga gtt ttt	494
Gly Tyr Leu Ile Ile Glu Glu Asp Phe Asn Ile Ala Leu Gly Val Phe	
125 130 135 140	
gct tta gct gga cta aca gat ttg ttg gat gga ttt att gct cga aac	542
Ala Leu Ala Gly Leu Thr Asp Leu Leu Asp Gly Phe Ile Ala Arg Asn	
141 146 151 156	
tgg gcc aat caa aga tca gct ttg gga agt gct ctt gat cca ctt gct	590
Trp Ala Asn Gln Arg Ser Ala Leu Gly Ser Ala Leu Asp Pro Leu Ala	
157 162 167 172	
gat aaa ata ctt atc agt atc tta tat gtt agc ttg acc tat gca gat	638
Asp Lys Ile Leu Ile Ser Ile Leu Tyr Val Ser Leu Thr Tyr Ala Asp	
173 178 183 188	
ctt att cca gtt cca ctt act tac atg atc att tgc aga gat gta atg	686
Leu Ile Pro Val Pro Leu Thr Tyr Met Ile Ile Ser Arg Asp Val Met	
189 194 199 204	
ttg att gct gct gtt ttt tat gtc aga tac cga act ctt cca aca cca	734
Leu Ile Ala Ala Val Phe Tyr Val Arg Tyr Arg Thr Leu Pro Thr Pro	
205 210 215 220	
gtc ctc tgc cag cga aca ctt gcc aag tat ttc aat cct tgc tat gcc	782
Val Leu Cys Gln Arg Thr Leu Ala Lys Tyr Phe Asn Pro Cys Tyr Ala	
221 226 231 236	
act gct agg tta aaa cca aca ttc atc agc aag gtg aat aca gca gtc	830
Thr Ala Arg Leu Lys Pro Thr Phe Ile Ser Lys Val Asn Thr Ala Val	
237 242 247 252	
cag tta atc ttg gtg gca gct tct ttg gca gct cca gtt ttc aac tat	878
Gln Leu Ile Leu Val Ala Ala Ser Leu Ala Ala Pro Val Phe Asn Tyr	
253 258 263 268	
gct gac agc att tat ctt cag ata cta tgg tgt ttt aca gct ttc acc	926
Ala Asp Ser Ile Tyr Leu Gln Ile Leu Trp Cys Phe Thr Ala Phe Thr	
269 274 279 284	

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aca gct gca tca gct tat agt tac tat cat tat ggc cgg aag act gtt      974
Thr Ala Ala Ser Ala Tyr Ser Tyr Tyr His Tyr Gly Arg Lys Thr Val
285                290                295                300

cag gtg ata aaa gac tga tgaaag tcatccctca ctgttagtaa ggaagcagta      1028
Gln Val Ile Lys Asp *
301                306

tacatcaatg ggaacagggc ccatggaaat gtacaggagt ttccctatatt tggtgttcag      1088

cttgaaaaag gacttgctcag aatcaactgt gtcacaaaaa tttaagtaat gtgcattgaa      1148

aataaggttg atcatgggaa tatgcagaat ttccaatgta tttttaaata caaataaaat      1208

tgtaatttag aatttttaaa aaaaaaaaaa      1237

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<212> DNA
<213> Homo sapiens

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<222> (59)..(1030)

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atg tcg gag cga aaa gta tta aac aaa tac tac ccg ccg gac ttt gac      106
Met Ser Glu Arg Lys Val Leu Asn Lys Tyr Tyr Pro Pro Asp Phe Asp
1                5                10                15

cca tca aag atc ccc aaa ctc aag ctc ccc aaa gac cgg cag tac gtg      154
Pro Ser Lys Ile Pro Lys Leu Lys Leu Pro Lys Asp Arg Gln Tyr Val
17                22                27                32

gtg cgg ctg atg gcc ccc ttc aac atg agg tgt aag acg tgc gga gaa      202
Val Arg Leu Met Ala Pro Phe Asn Met Arg Cys Lys Thr Cys Gly Glu
33                38                43                48

tac atc tac aag ggg aag aaa ttc aat gct cgg aag gag acg gtg cag      250
Tyr Ile Tyr Lys Gly Lys Lys Phe Asn Ala Arg Lys Glu Thr Val Gln
49                54                59                64

aac gag gtc tac ctg ggc ctg ccc atc ttc cgc ttt tac atc aag tgc      298
Asn Glu Val Tyr Leu Gly Leu Pro Ile Phe Arg Phe Tyr Ile Lys Cys
65                70                75                80

acg cgc tgc ctg gca gag atc acc ttc aag aca gac cct gaa aac aca      346
Thr Arg Cys Leu Ala Glu Ile Thr Phe Lys Thr Asp Pro Glu Asn Thr
81                86                91                96

gac tac acc atg gag cat gga gcc acg cgg aat ttc cag gct gag aag      394
Asp Tyr Thr Met Glu His Gly Ala Thr Arg Asn Phe Gln Ala Glu Lys
97                102                107                112

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ctc ctg gag gag gag gag aag agg gtg cag aag gag cgg gag gac gag	442
Leu Leu Glu Glu Glu Glu Lys Arg Val Gln Lys Glu Arg Glu Asp Glu	
113 118 123 128	
gag ctg aac aac ccc atg aag gtg ctg gag aac cgg acc aag gac tcc	490
Glu Leu Asn Asn Pro Met Lys Val Leu Glu Asn Arg Thr Lys Asp Ser	
129 134 139 144	
aag ctg gag atg gag gtg ctg gag aac ctc cag gag ctg aaa gac ctg	538
Lys Leu Glu Met Glu Val Leu Glu Asn Leu Gln Glu Leu Lys Asp Leu	
145 150 155 160	
aac cag cgg cag gcg cac gtg gac ttc gag gct atg ctg agg cag cac	586
Asn Gln Arg Gln Ala His Val Asp Phe Glu Ala Met Leu Arg Gln His	
161 166 171 176	
cgc ctg tcg gag gag gag cgg cgg agg cag cag cag gag gag gac gag	634
Arg Leu Ser Glu Glu Glu Arg Arg Arg Gln Gln Gln Glu Glu Asp Glu	
177 182 187 192	
cag gag acc gcg gcc ctg ttg gag gaa gcc aga aag cga aga ctg ctg	682
Gln Glu Thr Ala Ala Leu Leu Glu Glu Ala Arg Lys Arg Arg Leu Leu	
193 198 203 208	
gag gac tcc gac tca gag gat gag gct gct ccc tcg ccc ctg cag cca	730
Glu Asp Ser Asp Ser Glu Asp Glu Ala Ala Pro Ser Pro Leu Gln Pro	
209 214 219 224	
gcc ctt cgg ccc aac ccc acc gcc atc ctg gat gag gcc cca aag ccc	778
Ala Leu Arg Pro Asn Pro Thr Ala Ile Leu Asp Glu Ala Pro Lys Pro	
225 230 235 240	
aag agg aag gtg gag gtc tgg gag cag agc gtt ggc agc ctg ggc agc	826
Lys Arg Lys Val Glu Val Trp Glu Gln Ser Val Gly Ser Leu Gly Ser	
241 246 251 256	
cgg ccc ccg ctg tcg agg ctg gtc gtg gtg aag aag gca aag gcc gac	874
Arg Pro Pro Leu Ser Arg Leu Val Val Val Lys Lys Ala Lys Ala Asp	
257 262 267 272	
ccg gac tgc agc aac ggg cag cct cag gcg gcc ccc acc cca gga gcc	922
Pro Asp Cys Ser Asn Gly Gln Pro Gln Ala Ala Pro Thr Pro Gly Ala	
273 278 283 288	
ccg cag aac agg aag gag gcc aac cct aca ccc ctg acg cct ggc gcg	970
Pro Gln Asn Arg Lys Glu Ala Asn Pro Thr Pro Leu Thr Pro Gly Ala	
289 294 299 304	
tcc tcc ctg agc caa ctg ggt gca tac ctg gac agt gac gac agc aac	1018
Ser Ser Leu Ser Gln Leu Gly Ala Tyr Leu Asp Ser Asp Asp Ser Asn	
305 310 315 320	
ggc agc aac tga gcc ctcccaggac cccctcacgg ggtcaaagtc acacgtccag	1073
Gly Ser Asn *	
321	

cttcagccac attgaggcca gcattgctgg tggtcagggc aggaggcctt ggcgtgactg 1133  
gaggccggac agacaagcgc cagcgtgctc caacacatag ggccaccagg ggcctcagcc 1193  
ccaggaggtc ccttctctgt gccctcacca gcctotcaac acctcgggga cccctgctgc 1253  
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tacttcaggg tggcagtgtt tggggcactg ggcgagcctg ccggcctcta gatggcctca 1373  
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<222> (105)..(1661)

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<222> (1)...(2145)  
<223> n = a,t,c or g

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Met Ala Phe Trp  
1  
gcg ggg ggt tcg ccc agc gtc gtg gac tat ttc cct agc gag gac ttc 164  
Ala Gly Gly Ser Pro Ser Val Val Asp Tyr Phe Pro Ser Glu Asp Phe  
5 10 15 20  
tac cgc tgc ggc tac tgc aag aac gag tcg ggc agc cgc tcc aat ggc 212  
Tyr Arg Cys Gly Tyr Cys Lys Asn Glu Ser Gly Ser Arg Ser Asn Gly  
21 26 31 36  
atg tgg gca cat tcc atg aca gta cag gat tat cag gat ctc ata gac 260  
Met Trp Ala His Ser Met Thr Val Gln Asp Tyr Gln Asp Leu Ile Asp  
37 42 47 52  
cga gga tgg cga aga agt gga aaa tat gtg tac aaa cct gtc atg aat 308  
Arg Gly Trp Arg Arg Ser Gly Lys Tyr Val Tyr Lys Pro Val Met Asn  
53 58 63 68  
caa aca tgt tgt cct cag tac aca ata agg tgc cga cct tta caa ttt 356  
Gln Thr Cys Cys Pro Gln Tyr Thr Ile Arg Cys Arg Pro Leu Gln Phe  
69 74 79 84  
cag cct tca aaa tct cac aag aag gtt ttg aaa aaa atg ttg aaa ttt 404

Gln	Pro	Ser	Lys	Ser	His	Lys	Lys	Val	Leu	Lys	Lys	Met	Leu	Lys	Phe		
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ctg	gct	aaa	ggg	gag	gtt	ccc	aaa	gga	agt	tgt	gag	gat	gag	ccc	atg	452	
Leu	Ala	Lys	Gly	Glu	Val	Pro	Lys	Gly	Ser	Cys	Glu	Asp	Glu	Pro	Met		
101					106					111					116		
gat	tcc	aca	atg	gat	gat	gct	gtt	gcg	ggg	gac	ttt	gca	ttg	ata	aat	500	
Asp	Ser	Thr	Met	Asp	Asp	Ala	Val	Ala	Gly	Asp	Phe	Ala	Leu	Ile	Asn		
117					122					127					132		
aaa	ctg	gat	ata	cag	tgt	gat	ctt	aaa	aca	ctc	agt	gat	gac	atc	aaa	548	
Lys	Leu	Asp	Ile	Gln	Cys	Asp	Leu	Lys	Thr	Leu	Ser	Asp	Asp	Ile	Lys		
133					138					143					148		
gag	agt	tta	gag	agt	gaa	gga	aaa	aat	tca	aag	aaa	gaa	gaa	cct	cag	596	
Glu	Ser	Leu	Glu	Ser	Glu	Gly	Lys	Asn	Ser	Lys	Lys	Glu	Glu	Pro	Gln		
149					154					159					164		
gaa	tta	ctt	cag	tca	caa	gat	ttc	gta	gga	gag	aag	ttg	ggc	tct	ggg	644	
Glu	Leu	Leu	Gln	Ser	Gln	Asp	Phe	Val	Gly	Glu	Lys	Leu	Gly	Ser	Gly		
165					170					175					180		
gaa	ccg	tca	cat	tca	gtt	aaa	gtt	cac	aca	gtt	cct	aag	cca	ggc	aaa	692	
Glu	Pro	Ser	His	Ser	Val	Lys	Val	His	Thr	Val	Pro	Lys	Pro	Gly	Lys		
181					186					191					196		
ggg	gct	gat	ttg	agt	aag	cct	cca	tgt	cga	aaa	gca	aag	gaa	atc	cgg	740	
Gly	Ala	Asp	Leu	Ser	Lys	Pro	Pro	Cys	Arg	Lys	Ala	Lys	Glu	Ile	Arg		
197					202					207					212		
aaa	gaa	agg	aaa	agg	tta	aaa	cta	atg	cag	cag	aac	cca	gct	gga	gaa	788	
Lys	Glu	Arg	Lys	Arg	Leu	Lys	Leu	Met	Gln	Gln	Asn	Pro	Ala	Gly	Glu		
213					218					223					228		
ctt	gag	ggg	ttc	cag	gct	caa	ggg	cac	cca	cca	tct	ttg	ttt	cca	cca	836	
Leu	Glu	Gly	Phe	Gln	Ala	Gln	Gly	His	Pro	Pro	Ser	Leu	Phe	Pro	Pro		
229					234					239					244		
aag	gct	aaa	tcc	aac	cag	cca	aaa	tca	ctc	gaa	gat	tta	att	ttt	gag	884	
Lys	Ala	Lys	Ser	Asn	Gln	Pro	Lys	Ser	Leu	Glu	Asp	Leu	Ile	Phe	Glu		
245					250					255					260		
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Ser	Leu	Pro	Glu	Asn	Ala	Ser	His	Lys	Leu	Glu	Val	Arg	Val	Val	Arg		
261					266					271					276		
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Ser	Ser	Pro	Pro	Ser	Ser	Gln	Phe	Lys	Ala	Thr	Leu	Leu	Glu	Ser	Tyr		
277					282					287					292		
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Gln	Val	Tyr	Lys	Arg	Tyr	Gln	Met	Val	Ile	His	Lys	Asn	Pro	Pro	Asp		
293					298					303		/			308		
acg	cca	acc	gaa	agc	cag	ttc	aca	aga	ttc	ctt	tgc	agt	tca	ccc	ttg	1076	
Thr	Pro	Thr	Glu	Ser	Gln	Phe	Thr	Arg	Phe	Leu	Cys	Ser	Ser	Pro	Leu		

309	314	319	324	
gag gca gag act ccc cct aat ggg cca gat tgt ggc tat ggc tcc ttt				1124
Glu Ala Glu Thr Pro Pro Asn Gly Pro Asp Cys Gly Tyr Gly Ser Phe				
325	330	335	340	
cac cag cag tac tgg ctt gac gga aag atc att gct gtg ggg gtg att				1172
His Gln Gln Tyr Trp Leu Asp Gly Lys Ile Ile Ala Val Gly Val Ile				
341	346	351	356	
gac atc ctc cca aac tgt gta tca tct gtg tat ttg tac tac gat cct				1220
Asp Ile Leu Pro Asn Cys Val Ser Ser Val Tyr Leu Tyr Tyr Asp Pro				
357	362	367	372	
gat tat tcg ttt ttg tct ttg ggc gtc tac tct gca cta cga gaa att				1268
Asp Tyr Ser Phe Leu Ser Leu Gly Val Tyr Ser Ala Leu Arg Glu Ile				
373	378	383	388	
gct ttt act agg cag ctt cat gag aaa act tct caa ctc agc tat tat				1316
Ala Phe Thr Arg Gln Leu His Glu Lys Thr Ser Gln Leu Ser Tyr Tyr				
389	394	399	404	
tat atg ggt ttc tac att cat tca tgt ccc aag atg aaa tat aag ggt				1364
Tyr Met Gly Phe Tyr Ile His Ser Cys Pro Lys Met Lys Tyr Lys Gly				
405	410	415	420	
cag tat aga cct tct gat ttg ctg tgc cct gag aca tat gtt tgg gta				1412
Gln Tyr Arg Pro Ser Asp Leu Leu Cys Pro Glu Thr Tyr Val Trp Val				
421	426	431	436	
ccc att gag caa tgc ctg cct tca ctt gaa aac tcc aag tac tgc cgt				1460
Pro Ile Glu Gln Cys Leu Pro Ser Leu Glu Asn Ser Lys Tyr Cys Arg				
437	442	447	452	
ttc aac cag gac cca gaa gca gtg gat gag gat cgc agt acg gaa cct				1508
Phe Asn Gln Asp Pro Glu Ala Val Asp Glu Asp Arg Ser Thr Glu Pro				
453	458	463	468	
gac cga ttg cag gtg ttt cac aag aga gcc atc atg cct tac ggt gtt				1556
Asp Arg Leu Gln Val Phe His Lys Arg Ala Ile Met Pro Tyr Gly Val				
469	474	479	484	
tat aag aaa cag cag aaa gac cca agt gag gag gct gct gtt ctg cag				1604
Tyr Lys Lys Gln Gln Lys Asp Pro Ser Glu Glu Ala Ala Val Leu Gln				
485	490	495	500	
tac gcc agc ctg gtg ggg cag aag tgc tcc gag cgg atg ctg ctg ttc				1652
Tyr Ala Ser Leu Val Gly Gln Lys Cys Ser Glu Arg Met Leu Leu Phe				
501	506	511	516	
aga aac tga cctgttc goctctgccg ggaagttcct gtgttggtgct gatgatttgt				1708
Arg Asn *				
517				
gccaggatac atattcagta cctgtgggga aataactgtc accaccacaca aattagacat				1768
ttttatttttg actatctatg gcttttaaaa aatatttttgt ggcaatgtat ctgtgagaat				1828

ctcatagtta atataaagat tttaaaactg cattatgacc tagcccccat aattgggatt 1888  
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Met  
1  
gag gac tct gaa gca ctg ggc ttc gaa cac atg ggc ctc gat ccc cgg 165  
Glu Asp Ser Glu Ala Leu Gly Phe Glu His Met Gly Leu Asp Pro Arg  
2 7 12 17  
ctc ctt cag gct gtc acc gat ctg ggc tgg tgc cga cct acg ctg atc 213  
Leu Leu Gln Ala Val Thr Asp Leu Gly Trp Ser Arg Pro Thr Leu Ile  
18 23 28 33  
cag gag aag gcc atc cca ctg gcc cta gaa ggg aag gac ctc ctg gct 261  
Gln Glu Lys Ala Ile Pro Leu Ala Leu Glu Gly Lys Asp Leu Leu Ala  
34 39 44 49  
cgg gcc cgc acg ggc tcc ggg aag acg gcc gct tat gct att ccg atg 309  
Arg Ala Arg Thr Gly Ser Gly Lys Thr Ala Ala Tyr Ala Ile Pro Met  
50 55 60 65  
ctg cag ctg ttg ctc cat agg aag gcg aca ggt ccg gtg gta gaa cag 357  
Leu Gln Leu Leu Leu His Arg Lys Ala Thr Gly Pro Val Val Glu Gln  
66 71 76 81  
gca gtg aga ggc ctt gtt ctt gtt cct acc aag gag ctg gca cgg caa 405  
Ala Val Arg Gly Leu Val Leu Val Pro Thr Lys Glu Leu Ala Arg Gln  
82 87 92 97  
gca cag tcc atg att cag cag ctg gct acc tac tgt gct cgg gat gtc 453

Ala	Gln	Ser	Met	Ile	Gln	Gln	Leu	Ala	Thr	Tyr	Cys	Ala	Arg	Asp	Val
98					103					108					113

cga	gtg	gcc	aat	gtc	tca	gct	gct	gaa	gac	tca	gtc	tct	cag	aga	gct	501
Arg	Val	Ala	Asn	Val	Ser	Ala	Ala	Glu	Asp	Ser	Val	Ser	Gln	Arg	Ala	
114					119					124					129	

gtg	ctg	atg	gag	aag	cca	gat	gtg	gta	gta	ggg	acc	cca	tct	cgc	ata	549
Val	Leu	Met	Glu	Lys	Pro	Asp	Val	Val	Val	Gly	Thr	Pro	Ser	Arg	Ile	
130					135					140					145	

tta	agc	cac	ttg	cag	caa	gac	agc	ctg	aaa	ctt	cgt	gac	tcc	ctg	gag	597
Leu	Ser	His	Leu	Gln	Gln	Asp	Ser	Leu	Lys	Leu	Arg	Asp	Ser	Leu	Glu	
146					151					156					161	

ctt	ttg	gtg	gtg	gac	gaa	gct	gac	ctt	ctt	ttt	tcc	ttt	ggc	ttt	gaa	645
Leu	Leu	Val	Val	Asp	Glu	Ala	Asp	Leu	Leu	Phe	Ser	Phe	Gly	Phe	Glu	
162					167					172					177	

gaa	gag	ctc	aag	agt	ctc	ctc	tgt	cac	ttg	ccc	cgg	att	tac	cag	gct	693
Glu	Glu	Leu	Lys	Ser	Leu	Leu	Cys	His	Leu	Pro	Arg	Ile	Tyr	Gln	Ala	
178					183					188					193	

ttt	ctc	atg	tca	gct	act	ttt	aac	gag	gac	gta	caa	gca	ctc	aag	gag	741
Phe	Leu	Met	Ser	Ala	Thr	Phe	Asn	Glu	Asp	Val	Gln	Ala	Leu	Lys	Glu	
194					199					204					209	

ctg	ata	tta	cat	aac	ccg	gtt	acc	ctt	aag	tta	cag	gag	tcc	cag	ctg	789
Leu	Ile	Leu	His	Asn	Pro	Val	Thr	Leu	Lys	Leu	Gln	Glu	Ser	Gln	Leu	
210					215					220					225	

cct	ggg	cca	gac	cag	tta	cag	cag	ttt	cag	gtg	gtc	tgt	gag	act	gag	837
Pro	Gly	Pro	Asp	Gln	Leu	Gln	Gln	Phe	Gln	Val	Val	Cys	Glu	Thr	Glu	
226					231					236					241	

gaa	gac	aaa	ttc	ctc	ctg	ctg	tat	gcc	ctg	ctc	aag	ctg	tca	ttg	att	885
Glu	Asp	Lys	Phe	Leu	Leu	Leu	Tyr	Ala	Leu	Leu	Lys	Leu	Ser	Leu	Ile	
242					247					252					257	

cgg	ggc	aag	tct	ctg	ctc	ttt	gtc	aac	act	cta	gaa	cgg	agt	tac	cgg	933
Arg	Gly	Lys	Ser	Leu	Leu	Phe	Val	Asn	Thr	Leu	Glu	Arg	Ser	Tyr	Arg	
258					263					268					273	

cta	cgc	ctg	ttc	ttg	gaa	cag	ttc	agc	atc	ccc	acc	tgt	gtg	ctc	aat	981
Leu	Arg	Leu	Phe	Leu	Glu	Gln	Phe	Ser	Ile	Pro	Thr	Cys	Val	Leu	Asn	
274					279					284					289	

gga	gag	ctt	cca	ctg	cgc	tcc	agg	tgc	cac	atc	atc	tca	cag	ttc	aac	1029
Gly	Glu	Leu	Pro	Leu	Arg	Ser	Arg	Cys	His	Ile	Ile	Ser	Gln	Phe	Asn	
290					295					300					305	

caa	ggc	ttc	tac	gac	tgt	gtc	ata	gca	act	gat	gct	gaa	gtc	ctg	ggg	1077
Gln	Gly	Phe	Tyr	Asp	Cys	Val	Ile	Ala	Thr	Asp	Ala	Glu	Val	Leu	Gly	
306					311					316					321	

gcc	cca	gtc	aag	ggc	aag	cgt	cgg	ggc	cga	ggg	ccc	aaa	ggg	gac	aag	1125
Ala	Pro	Val	Lys	Gly	Lys	Arg	Arg	Gly	Arg	Gly	Pro	Lys	Gly	Asp	Lys	

322	327	332	337	
gcc tct gat ccg gaa gca ggt gtg gcc cgg ggc ata gac ttc cac cat				1173
Ala Ser Asp Pro Glu Ala Gly Val Ala Arg Gly Ile Asp Phe His His				
338	343	348	353	
gtg tct gct gtg ctc aac ttt gat ctt ccc cca acc cct gag gcc tac				1221
Val Ser Ala Val Leu Asn Phe Asp Leu Pro Pro Thr Pro Glu Ala Tyr				
354	359	364	369	
atc cat cga gct ggc agg aca gca cgc gct aac aac cca ggc ata gtc				1269
Ile His Arg Ala Gly Arg Thr Ala Arg Ala Asn Asn Pro Gly Ile Val				
370	375	380	385	
tta acc ttt gtg ctt ccc acg gag cag ttc cac tta ggc aag att gag				1317
Leu Thr Phe Val Leu Pro Thr Glu Gln Phe His Leu Gly Lys Ile Glu				
386	391	396	401	
gag ctt ctc agt gga gag aac agg ggc ccc att ctg ctc ccc tac cag				1365
Glu Leu Leu Ser Gly Glu Asn Arg Gly Pro Ile Leu Leu Pro Tyr Gln				
402	407	412	417	
ttc cgg atg gag gag atc gag ggc ttc cgc tat cgc tgc agg gat gcc				1413
Phe Arg Met Glu Glu Ile Glu Gly Phe Arg Tyr Arg Cys Arg Asp Ala				
418	423	428	433	
atg cgc tca gtg act aag cag gcc att cgg gag gca aga ttg aag gag				1461
Met Arg Ser Val Thr Lys Gln Ala Ile Arg Glu Ala Arg Leu Lys Glu				
434	439	444	449	
atc aag gaa gag ctt ctg cat tct gag aag ctt aag aca tac ttt gaa				1509
Ile Lys Glu Glu Leu Leu His Ser Glu Lys Leu Lys Thr Tyr Phe Glu				
450	455	460	465	
gac aac cct agg gac ctc cag ctg ctg cgg cat gac cta cct ttg cac				1557
Asp Asn Pro Arg Asp Leu Gln Leu Leu Arg His Asp Leu Pro Leu His				
466	471	476	481	
ccc gca gtg gtg aag ccc cac ctg ggc cat gtt cct gac tac ctg gtt				1605
Pro Ala Val Val Lys Pro His Leu Gly His Val Pro Asp Tyr Leu Val				
482	487	492	497	
cct cct gct ctc cgt ggc ctg gtg cgc cct cac aag aag cgg aag aag				1653
Pro Pro Ala Leu Arg Gly Leu Val Arg Pro His Lys Lys Arg Lys Lys				
498	503	508	513	
ctg tct tcc tct tgt agg aag gcc aag aga gca aag tcc cag aac cca				1701
Leu Ser Ser Ser Cys Arg Lys Ala Lys Arg Ala Lys Ser Gln Asn Pro				
514	519	524	529	
ctg cgc agc ttc aag cac aaa gga aag aaa ttc aga ccc aca gcc aag				1749
Leu Arg Ser Phe Lys His Lys Gly Lys Lys Phe Arg Pro Thr Ala Lys				
530	535	540	545	
ccc tcc tga gggtgtt gggcctctct ggagctgagc acattgtgga gcacaggctt				1805
Pro Ser *				
546				

acacccttcg tggacaggcg aggcctctggt gcttactgca cagcctgaac agacagttct 1865  
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 ccactcgctg gctgccaccg ggagcagagg ggggctcggc cgccccctcc cacatcagtc 180  
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 cggatgtccc cgccatgtgg ccccttgctc caggggtgcc tgagcccctt caaggagccc 660  
 caaccacccc ccaaccttgg ccagccctg agcccaggg acc atg agc ggg ggc 715  
 Met Ser Gly Gly  
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aag aag aag agt agt ttc caa atc acc agc gtc acc acg gac tat gag 763  
 Lys Lys Lys Ser Ser Phe Gln Ile Thr Ser Val Thr Thr Asp Tyr Glu  
 5 10 15 20

ggc cct ggg agc cca ggg gct tcg gat ccc cct acc cca cag ccc cca 811  
 Gly Pro Gly Ser Pro Gly Ala Ser Asp Pro Pro Thr Pro Gln Pro Pro  
 21 26 31 36

acc ggg ccc ccg ccc cgc ctg ccc aat ggg gag ccc agc ccc gat ccg 859  
 Thr Gly Pro Pro Pro Arg Leu Pro Asn Gly Glu Pro Ser Pro Asp Pro  
 37 42 47 52



ggg ggc aag ggc acc ccc cgg aat ggc tcc cca cca cct ggg gcc cct	907
Gly Gly Lys Gly Thr Pro Arg Asn Gly Ser Pro Pro Pro Gly Ala Pro	
53 58 63 68	
tcc tcc cgt ttc cgg gtg gtg aag ctg ccc cac ggc ctg gga gag cct	955
Ser Ser Arg Phe Arg Val Val Lys Leu Pro His Gly Leu Gly Glu Pro	
69 74 79 84	
tat cgc cgc ggt cgc tgg acg tgt gtg gat gtt tat gag cga gac ctg	1003
Tyr Arg Arg Gly Arg Trp Thr Cys Val Asp Val Tyr Glu Arg Asp Leu	
85 90 95 100	
gag ccc cac agc ttc ggc gga ctc ctg gag gga att cga ggg gcc tca	1051
Glu Pro His Ser Phe Gly Gly Leu Leu Glu Gly Ile Arg Gly Ala Ser	
101 106 111 116	
ggg ggc gcc ggg ggc aga tct ttg gat tcc agg ttg gag ctg gcc agc	1099
Gly Gly Ala Gly Gly Arg Ser Leu Asp Ser Arg Leu Glu Leu Ala Ser	
117 122 127 132	
ctc ggc ctg ggc gcc ccc acc cca ccg tca ggc ctg tct cag ggc ccc	1147
Leu Gly Leu Gly Ala Pro Thr Pro Pro Ser Gly Leu Ser Gln Gly Pro	
133 138 143 148	
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Thr Ser Trp Leu Arg Pro Pro Pro Thr Ser Pro Gly Pro Gln Ala Arg	
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Ser Phe Thr Gly Gly Leu Gly Gln Leu Val Val Pro Ser Lys Ala Lys	
165 170 175 180	
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Ala Glu Lys Pro Pro Leu Ser Ala Ser Ser Pro Gln Gln Arg Pro Pro	
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Glu Pro Glu Thr Gly Glu Ser Ala Gly Thr Ser Arg Ala Ala Thr Pro	
197 202 207 212	
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Leu Pro Ser Leu Arg Val Glu Ala Glu Ala Gly Gly Ser Gly Ala Arg	
213 218 223 228	
acc cct cca ctg tcc cgg agg aaa gct gta gac atg cgg ctg cgg atg	1435
Thr Pro Pro Leu Ser Arg Arg Lys Ala Val Asp Met Arg Leu Arg Met	
229 234 239 244	
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Glu Leu Gly Ala Pro Glu Glu Met Gly Gln Val Pro Pro Leu Asp Ser	
245 250 255 260	
cgc ccc agc tcc cca gcc ctc tac ttc acc cac gat gcc agc ctg gtt	1531
Arg Pro Ser Ser Pro Ala Leu Tyr Phe Thr His Asp Ala Ser Leu Val	
261 266 271 276	

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His Lys Ser Pro Asp Pro Phe Gly Ala Val Ala Ala Gln Lys Phe Ser	
277 282 287 292	
ctg gcc cac tcc atg ttg gcc atc agt ggt cac cta gac agc gac gat	1627
Leu Ala His Ser Met Leu Ala Ile Ser Gly His Leu Asp Ser Asp Asp	
293 298 303 308	
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Asp Ser Gly Ser Gly Ser Leu Val Gly Ile Asp Asn Lys Ile Glu Gln	
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Ala Met Asp Leu Val Lys Ser His Leu Met Phe Ala Val Arg Glu Glu	
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Val Glu Val Leu Lys Glu Gln Ile Arg Glu Leu Ala Glu Arg Asn Ala	
341 346 351 356	
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357 362 367 372	
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Gln Leu Ala Gln Leu Pro Ser Ser Gly Val Pro Arg Leu Gly Pro Pro	
373 378 383 388	
gcg ccc aat ggg ccc tcc gtc tga gcctcccttc ccttacaatg tgcctttggg	1921
Ala Pro Asn Gly Pro Ser Val *	
389 394	
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atg aga gct tta aaa gaa ctt gat gag gga aaa ata ttt aaa aat tgg 348  
Met Arg Ala Leu Lys Glu Leu Asp Glu Gly Lys Ile Phe Lys Asn Trp  
1 5 10 15

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Gly Thr Gln Thr Glu Lys Glu Asp Thr Ser Asn Ile Asn Pro Arg Gln  
17 22 27 32

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Thr Glu Thr Ser Val Asn Ala Ser Arg Ser Pro Glu Lys Cys Ala Gln  
33 38 43 48

cag aga caa aag aga ctt aat tcg gcc tca cag aga tca tca tct tta 492  
Gln Arg Gln Lys Arg Leu Asn Ser Ala Ser Gln Arg Ser Ser Ser Leu  
49 54 59 64

cca cct tca aat cgt aaa tca agt act cca aca aaa aga gag att atg 540  
Pro Pro Ser Asn Arg Lys Ser Ser Thr Pro Thr Lys Arg Glu Ile Met  
65 70 75 80

cta aca cca gtg act gtg gct tat agt cca aag cga tcc cct aaa gaa 588  
Leu Thr Pro Val Thr Val Ala Tyr Ser Pro Lys Arg Ser Pro Lys Glu  
81 86 91 96

aac ttg tcc cca gga ttt agt cat ctg ctt agc aaa aat gag agc agt 636  
Asn Leu Ser Pro Gly Phe Ser His Leu Leu Ser Lys Asn Glu Ser Ser  
97 102 107 112

cca att cga ttt gat ata ctt ttg gat gat tta gat act gtt cct gtg 684  
Pro Ile Arg Phe Asp Ile Leu Leu Asp Asp Leu Asp Thr Val Pro Val  
113 118 123 128

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Ser Thr Leu Gln Arg Thr Asn Pro Arg Lys Gln Leu Gln Phe Leu Pro  
129 134 139 144

cta gat gac tcg gaa gaa aaa act tat tct gag aaa gcc acc gat aac 780  
Leu Asp Asp Ser Glu Glu Lys Thr Tyr Ser Glu Lys Ala Thr Asp Asn  
145 150 155 160

cat gtt aat cat agc tct tgc cct gaa ccg gtg cca aat gga gtg aag 828  
His Val Asn His Ser Ser Cys Pro Glu Pro Val Pro Asn Gly Val Lys  
161 166 171 176

aaa gta tct gtg aga aca gcc tgg gag aag aat aaa tca gtt agc tac 876

Lys Val Ser Val Arg Thr Ala Trp Glu Lys Asn Lys Ser Val Ser Tyr	
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gaa cag tgt aag ccg gtt tca gtc act cca cag ggg aat gat ttt gaa	924
Glu Gln Cys Lys Pro Val Ser Val Thr Pro Gln Gly Asn Asp Phe Glu	
193	198 203 208
tat aca gca aaa att cgg acc cta gct gaa aca gaa cga ttt ttt gat	972
Tyr Thr Ala Lys Ile Arg Thr Leu Ala Glu Thr Glu Arg Phe Phe Asp	
209	214 219 224
gaa ctt aca aaa gaa aag gac cag att gag gca gca cta agc agg atg	1020
Glu Leu Thr Lys Glu Lys Asp Gln Ile Glu Ala Ala Leu Ser Arg Met	
225	230 235 240
cct tct cct gga gga cga atc act tta cag aca aga tta aat cag gaa	1068
Pro Ser Pro Gly Gly Arg Ile Thr Leu Gln Thr Arg Leu Asn Gln Glu	
241	246 251 256
gcc ttg gaa gat cgt ttg gaa agg att aat cga gaa ctg ggt tca gtt	1116
Ala Leu Glu Asp Arg Leu Glu Arg Ile Asn Arg Glu Leu Gly Ser Val	
257	262 267 272
cgc atg acg cta aag aaa ttc cat gtt ttg cgc acc tct gca aat ctt	1164
Arg Met Thr Leu Lys Lys Phe His Val Leu Arg Thr Ser Ala Asn Leu	
273	278 283 288
tga gatt tgtagccatt aaattttgag acatttttgt ttgcactaat gtataattat	1221
*	
289	
gcagtcagaa aaggcaaact attttgtact gtttataagc cttcaaacag tagttttaca	1281
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tctaaacaaa tagtggtatc cttttacaat taactgcaca tcaattttat agacttggtc	1521
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<400> 425

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tcaacatgta tgtttggtgt gggggcgggg ggcaagatac agacatttag tccatagcac	180
tgtatgtctt aaaattattg tttaaggcac cgttcacctc tggaaaagga ttcttcacct	240
ggaagttcat caacaagctt gttgataaaa aagcaaagag agacttcaga cacgccgac	300
atg aga gct tta aaa gaa ctt gat gag gga aaa ata ttt aaa aat tgg	348
Met Arg Ala Leu Lys Glu Leu Asp Glu Gly Lys Ile Phe Lys Asn Trp	
1 5 10 15	
ggg aca cag aca gag aaa gag gac acc tca aat ata aat cct cgg caa	396
Gly Thr Gln Thr Glu Lys Glu Asp Thr Ser Asn Ile Asn Pro Arg Gln	
17 22 27 32	
act gaa act tca gtt aat gca agt cgt tct cca gaa aag tgt gcc caa	444
Thr Glu Thr Ser Val Asn Ala Ser Arg Ser Pro Glu Lys Cys Ala Gln	
33 38 43 48	
cag aga caa aag aga ctt aat tcg gcc tca cag aga tca tca tct tta	492
Gln Arg Gln Lys Arg Leu Asn Ser Ala Ser Gln Arg Ser Ser Ser Leu	
49 54 59 64	
cca cct tca aat cgt aaa tca agt act cca aca aaa aga gag att atg	540
Pro Pro Ser Asn Arg Lys Ser Ser Thr Pro Thr Lys Arg Glu Ile Met	
65 70 75 80	
cta aca cca gtg act gtg gct tat agt cca aag cga tcc cct aaa gaa	588
Leu Thr Pro Val Thr Val Ala Tyr Ser Pro Lys Arg Ser Pro Lys Glu	
81 86 91 96	
aac ttg tcc cca gga ttt agt cat ctg ctt agc aaa aat gag agc agt	636
Asn Leu Ser Pro Gly Phe Ser His Leu Leu Ser Lys Asn Glu Ser Ser	
97 102 107 112	
cca att cga gaa aaa act tat tct gag aaa gcc acc gat aac cat gtt	684
Pro Ile Arg Glu Lys Thr Tyr Ser Glu Lys Ala Thr Asp Asn His Val	
113 118 123 128	
aat cat agc tct tgc cct gaa ccg gtg cca aat gga gtg aag aaa gta	732
Asn His Ser Ser Cys Pro Glu Pro Val Pro Asn Gly Val Lys Lys Val	
129 134 139 144	
tct gtg aga aca gcc tgg gag aag aat aaa tca gtt agc tac gaa cag	780
Ser Val Arg Thr Ala Trp Glu Lys Asn Lys Ser Val Ser Tyr Glu Gln	
145 150 155 160	
tgt aag ccg gtt tca gtc act cca cag ggg aat gat ttt gaa tat aca	828
Cys Lys Pro Val Ser Val Thr Pro Gln Gly Asn Asp Phe Glu Tyr Thr	
161 166 171 176	
gca aaa att cgg acc cta gct gaa aca gaa cga ttt ttt gat gaa ctt	876
Ala Lys Ile Arg Thr Leu Ala Glu Thr Glu Arg Phe Phe Asp Glu Leu	

177	182	187	192		
aca aaa gaa aag gac	cag att gag gca gca cta	agc agg atg cct tct	924		
Thr Lys Glu Lys Asp	Gln Ile Glu Ala Ala	Leu Ser Arg Met Pro Ser			
193	198	203	208		
cct gga gga cga atc	act tta cag aca aga tta	aat cag gaa gcc ttg	972		
Pro Gly Gly Arg Ile	Thr Leu Gln Thr Arg	Leu Asn Gln Glu Ala Leu			
209	214	219	224		
gaa gat cgt ttg gaa	agg att aat cga gaa	ctg ggt tca gtt cgc atg	1020		
Glu Asp Arg Leu Glu	Arg Ile Asn Arg Glu	Leu Gly Ser Val Arg Met			
225	230	235	240		
acg cta aag aaa ttc	cat gtt ttg cgc acc	tct gca aat ctt tga gat	1068		
Thr Leu Lys Lys Phe	His Val Leu Arg Thr	Ser Ala Asn Leu *			
241	246	251			
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aaaggcaaac tatttt	gttac tgtttataag	ccttcaaaca gtagttttac	aatcatgcta	1188	
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gctcaggaat ctcttg	tata ttttactatt	taaaaagcat	tattttttaa	tagtatctgt	1308
ctccaattta tatca	agaat aaggaa	atat aaacagagga	agcagcttgt	ttctaaacaa	1368
atagtgttat cctttt	tacaa ttaactgcac	atcaatttta	tagacttggt	ctacattgta	1428
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aaa				1491	

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atg act tat gct tat ctc	112
Met Thr Tyr Ala Tyr Leu	
1	
ttc aag tat atc atc atc	gga gac aca ggt gtg
ggg aag tca tgt ctc	160
Phe Lys Tyr Ile Ile Ile	Gly Asp Thr Gly Val Gly Lys Ser Cys Leu
7	12 17 22

ctc ctg cag ttt aca gat aag cgg ttc cag cct gtc cac gac ctc aca Leu Leu Gln Phe Thr Asp Lys Arg Phe Gln Pro Val His Asp Leu Thr 23 28 33 38	208
ata ggt gtg gag ttt gga gct cgt atg gtc aac att gat gga aaa caa Ile Gly Val Glu Phe Gly Ala Arg Met Val Asn Ile Asp Gly Lys Gln 39 44 49 54	256
atc aaa ctg caa atc tgg gat acg gct ggg caa gaa tcc ttc cgt tct Ile Lys Leu Gln Ile Trp Asp Thr Ala Gly Gln Glu Ser Phe Arg Ser 55 60 65 70	304
atc acc cgt tcc tac tac agg gga gca gct gga gca ctg ctg gtg tac Ile Thr Arg Ser Tyr Tyr Arg Gly Ala Ala Gly Ala Leu Leu Val Tyr 71 76 81 86	352
gac att aca agg cgt gaa acc ttc aac cac ctg acc tca tgg tta gag Asp Ile Thr Arg Arg Glu Thr Phe Asn His Leu Thr Ser Trp Leu Glu 87 92 97 102	400
gat gcc cgg cag cac tct agt tcc aac atg gtt atc atg ctc att ggg Asp Ala Arg Gln His Ser Ser Ser Asn Met Val Ile Met Leu Ile Gly 103 108 113 118	448
aat aag agt gac cta gag tcc cgc agg gat gtg aag aga gaa gaa gga Asn Lys Ser Asp Leu Glu Ser Arg Arg Asp Val Lys Arg Glu Glu Gly 119 124 129 134	496
gag gcc ttt gct agg gag cat gga ctt ata ttc atg gaa act tca gcc Glu Ala Phe Ala Arg Glu His Gly Leu Ile Phe Met Glu Thr Ser Ala 135 140 145 150	544
aaa aca gcc tgc aat gtt gaa gag gcc ttc att aac aca gcc aaa gaa Lys Thr Ala Cys Asn Val Glu Glu Ala Phe Ile Asn Thr Ala Lys Glu 151 156 161 166	592
ata tat agg aag atc cag cag ggt tta ttt gat gtc cac aat gag gca Ile Tyr Arg Lys Ile Gln Gln Gly Leu Phe Asp Val His Asn Glu Ala 167 172 177 182	640
aat ggc atc aag att ggg ccc caa cag tca att tca aca tca gtg gga Asn Gly Ile Lys Ile Gly Pro Gln Gln Ser Ile Ser Thr Ser Val Gly 183 188 193 198	688
ccc agt gcc tcc cag cgg aac tct cgt gac ata ggg tcc aac tct ggc Pro Ser Ala Ser Gln Arg Asn Ser Arg Asp Ile Gly Ser Asn Ser Gly 199 204 209 214	736
tgc tgc tga acatctg gcttgaactt tttttgtcct tcttgaata gcttcagatc Cys Cys * 215	792
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<210> 427  
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 <212> DNA  
 <213> Homo sapiens

<220>  
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 <222> (100)..(1371)

<400> 427

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                                     Met Ala Ala Pro Arg
                                     1

gta ttc cca ctt tcc tgt gcg gtg cag cag tat gcc tgg ggg aag atg      162
Val Phe Pro Leu Ser Cys Ala Val Gln Gln Tyr Ala Trp Gly Lys Met
   6              11              16              21

ggc tcc aac agc gaa gtg gcg cgg ctg ttg gcc agc agt gat cca ctg      210
Gly Ser Asn Ser Glu Val Ala Arg Leu Leu Ala Ser Ser Asp Pro Leu
  22              27              32              37

gcc cag atc gca gag gac aag cct tat gca gag ttg tgg atg ggg act      258
Ala Gln Ile Ala Glu Asp Lys Pro Tyr Ala Glu Leu Trp Met Gly Thr
  38              43              48              53

cac ccc cga ggg gat gcc aag atc ctt gac aac cgc atc tca cag aag      306
His Pro Arg Gly Asp Ala Lys Ile Leu Asp Asn Arg Ile Ser Gln Lys
  54              59              64              69

acc cta agc cag tgg att gct gag aac cag gac agc ttg ggc tca aag      354
Thr Leu Ser Gln Trp Ile Ala Glu Asn Gln Asp Ser Leu Gly Ser Lys
  70              75              80              85

gtc aag gac acc ttt aat ggc aac ctg ccc ttc ctc ttc aaa gtg ctc      402
Val Lys Asp Thr Phe Asn Gly Asn Leu Pro Phe Leu Phe Lys Val Leu
  86              91              96              101

tca gtt gaa aca ccc ctg tcc atc cag gca cac cct aac aag gag ctg      450
Ser Val Glu Thr Pro Leu Ser Ile Gln Ala His Pro Asn Lys Glu Leu
 102              107              112              117

gca gag aag ctg cac ctc cag gct ccg cag cac tac ccc gat gcc aac      498
Ala Glu Lys Leu His Leu Gln Ala Pro Gln His Tyr Pro Asp Ala Asn
 118              123              128              133

cac aag cca gag atg gcc att gcc ctc acc ccc ttc cag ggc ttg tgt      546
His Lys Pro Glu Met Ala Ile Ala Leu Thr Pro Phe Gln Gly Leu Cys
 134              139              144              149

ggc ttc cgg cca gtt gag gag att gta acc ttt cta aag aag gtg cct      594
Gly Phe Arg Pro Val Glu Glu Ile Val Thr Phe Leu Lys Lys Val Pro
 150              155              160              165

gag ttt cag ttc ctg att gga gat gag gca gca aca cac ctg aag cag      642

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Glu Phe Gln Phe Leu Ile Gly Asp Glu Ala Ala Thr His Leu Lys Gln	
166 171 176 181	
acc atg agc cat gac tcc cag gct gtg gcc tcc tct ctg cag agc tgt	690
Thr Met Ser His Asp Ser Gln Ala Val Ala Ser Ser Leu Gln Ser Cys	
182 187 192 197	
ttc tcc cac ctg atg aag agt gag aag aag gtg gtg gtg gaa cag ctc	738
Phe Ser His Leu Met Lys Ser Glu Lys Lys Val Val Val Glu Gln Leu	
198 203 208 213	
aac ctg ttg gtg aag cgg atc tcc cag caa gcg gct gcc gga aac aac	786
Asn Leu Leu Val Lys Arg Ile Ser Gln Gln Ala Ala Ala Gly Asn Asn	
214 219 224 229	
atg gag gac atc ttt ggg gag ctt ttg cta cag ctg cac cag cag tac	834
Met Glu Asp Ile Phe Gly Glu Leu Leu Leu Gln Leu His Gln Gln Tyr	
230 235 240 245	
cca ggt gat atc ggc tgc ttt gcc atc tac ttc ctg aac ctg ctt acc	882
Pro Gly Asp Ile Gly Cys Phe Ala Ile Tyr Phe Leu Asn Leu Leu Thr	
246 251 256 261	
ctg aag cct ggg gag gcc atg ttt ctg gag gcc aac gta ccc cat gcc	930
Leu Lys Pro Gly Glu Ala Met Phe Leu Glu Ala Asn Val Pro His Ala	
262 267 272 277	
tac ctg aaa gga gac tgc gtg gag tgc atg gcg tgt tca gac aac aca	978
Tyr Leu Lys Gly Asp Cys Val Glu Cys Met Ala Cys Ser Asp Asn Thr	
278 283 288 293	
gtt cgt gct ggc ctg aca ccc aag ttc att gat gtg cca acc ctg tgt	1026
Val Arg Ala Gly Leu Thr Pro Lys Phe Ile Asp Val Pro Thr Leu Cys	
294 299 304 309	
gaa atg ctc agc tat acc cct agc tcc agc aag gac agg ctc ttt ctc	1074
Glu Met Leu Ser Tyr Thr Pro Ser Ser Ser Lys Asp Arg Leu Phe Leu	
310 315 320 325	
cca aca cgg agt cag gaa gac ccc tac ctc tca atc tat gac ccc cct	1122
Pro Thr Arg Ser Gln Glu Asp Pro Tyr Leu Ser Ile Tyr Asp Pro Pro	
326 331 336 341	
gta cca gac ttc acc att atg aag acg gag gtc cct ggc tct gtc act	1170
Val Pro Asp Phe Thr Ile Met Lys Thr Glu Val Pro Gly Ser Val Thr	
342 347 352 357	
gaa tac aag gtc ttg gca ctg gac tct gcc agc atc ctc ctg atg gta	1218
Glu Tyr Lys Val Leu Ala Leu Asp Ser Ala Ser Ile Leu Leu Met Val	
358 363 368 373	
cag ggg aca gtg ata gcc agc aca ccc aca acc cag aca cca atc cct	1266
Gln Gly Thr Val Ile Ala Ser Thr Pro Thr Thr Gln Thr Pro Ile Pro	
374 379 384 389	
ctg caa cgt ggt ggc gtg ctc ttc att ggg gcc aat gag agt gtc tca	1314
Leu Gln Arg Gly Gly Val Leu Phe Ile Gly Ala Asn Glu Ser Val Ser	

390	395	400	405	
ctg aag ctt act gag ccg aag gac ctg ctg ata ttc cgt gcc tgc tgt				1362
Leu Lys Leu Thr Glu Pro Lys Asp Leu Leu Ile Phe Arg Ala Cys Cys				
406	411	416	421	
ctg ctg taa aggctgc agcctcccca gctctcctct gccagccacc ctaaattcca				1418
Leu Leu *				
422				
gccaacctca cctcctcggg cccagctcaa gcccccttcc ttgctctgga ccccttaggt				1478
ataccctgga agagctgggg tgggggagga gggagcgtga aggtagtgcac tcctgaacac				1538
accaggtgg aaccatcttt ggggaggaga ggcccgtgtg aggggtctga tactcccttt				1598
gtcttccctc tctactctc gctacacctg agccaggctc ttgccaaactc tgttccagcc				1658
tatggcttta ggctagctgt taaatatgtg acccagcatt agctcagcat ctgtcagagc				1718
aagagaccag gtaatttcta agaacagggt tctagcgatg ggactgccca tttcctcagc				1778
tcgagaggag gaaagggaaa gggtaggcct gtagactaac gctgtttaca cccttgttct				1838
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 <212> DNA  
 <213> Homo sapiens

<220>  
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 <222> (81)..(2459)

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	Met Leu Pro Ala Gly Glu Ile Gly Ala Ser	
	1 5	
cct gca gcc ccg tgc tgc tct gaa agt ggt gac gaa agg aag aac ctc		158
Pro Ala Ala Pro Cys Cys Ser Glu Ser Gly Asp Glu Arg Lys Asn Leu		
11 16 21 26		
gag gag aaa agt gac ata aat gtt aca gtt ctt att gga agt aaa caa		206
Glu Glu Lys Ser Asp Ile Asn Val Thr Val Leu Ile Gly Ser Lys Gln		
27 32 37 42		
gtc agt gaa ggt aca gat aat ggt gat ctc cct tct tat gtg tct gca		254
Val Ser Glu Gly Thr Asp Asn Gly Asp Leu Pro Ser Tyr Val Ser Ala		
43 48 53 58		

ttc ata gaa aag gaa gtt gga aat gac ctt aaa tct tta aag aaa ctt	302
Phe Ile Glu Lys Glu Val Gly Asn Asp Leu Lys Ser Leu Lys Lys Leu	
59 64 69 74	
gat aaa ctc ata gaa cag agg aca gta agt aaa atg cag tta gaa gaa	350
Asp Lys Leu Ile Glu Gln Arg Thr Val Ser Lys Met Gln Leu Glu Glu	
75 80 85 90	
cag gta ctt aca att tca tca gaa att cct aaa aga att cga agt gcc	398
Gln Val Leu Thr Ile Ser Ser Glu Ile Pro Lys Arg Ile Arg Ser Ala	
91 96 101 106	
tta aaa aat gca gaa gaa tca aag caa ttt ctt aat cag ttt ctg gag	446
Leu Lys Asn Ala Glu Glu Ser Lys Gln Phe Leu Asn Gln Phe Leu Glu	
107 112 117 122	
cag gaa act cat ctc ttc agc gcc att aac agc cat ttg ctg act gcg	494
Gln Glu Thr His Leu Phe Ser Ala Ile Asn Ser His Leu Leu Thr Ala	
123 128 133 138	
caa cct tgg atg gac gat ctt gga acc atg att agc cag att gaa gag	542
Gln Pro Trp Met Asp Asp Leu Gly Thr Met Ile Ser Gln Ile Glu Glu	
139 144 149 154	
atc gaa cgt cat ctt gct tac ctt aaa tgg att tca caa att gaa gaa	590
Ile Glu Arg His Leu Ala Tyr Leu Lys Trp Ile Ser Gln Ile Glu Glu	
155 160 165 170	
cta agt gat aac att cag caa tat ctg atg acc aat aat gta ccg gag	638
Leu Ser Asp Asn Ile Gln Gln Tyr Leu Met Thr Asn Asn Val Pro Glu	
171 176 181 186	
gca gcc tcc act cta gtg tct atg gca gaa ctt gac att aaa ctt cag	686
Ala Ala Ser Thr Leu Val Ser Met Ala Glu Leu Asp Ile Lys Leu Gln	
187 192 197 202	
gaa tca tct tgt act cat ctt ctt ggt ttc atg aga gcc aca gtt aaa	734
Glu Ser Ser Cys Thr His Leu Leu Gly Phe Met Arg Ala Thr Val Lys	
203 208 213 218	
ttc tgg cat aaa att ctc aag gac aag ctt aca agt gat ttt gag gaa	782
Phe Trp His Lys Ile Leu Lys Asp Lys Leu Thr Ser Asp Phe Glu Glu	
219 224 229 234	
att tta gca cag ctt cat tgg cca ttc atc gca ccc cct caa tca caa	830
Ile Leu Ala Gln Leu His Trp Pro Phe Ile Ala Pro Pro Gln Ser Gln	
235 240 245 250	
act gtt ggc tta agt cga cct gcc agt gcc ccg gag ata tac agt tac	878
Thr Val Gly Leu Ser Arg Pro Ala Ser Ala Pro Glu Ile Tyr Ser Tyr	
251 256 261 266	
ctg gag aca ctg ttt tgt cag ctt ttg aaa cta caa acc tca gat gaa	926
Leu Glu Thr Leu Phe Cys Gln Leu Leu Lys Leu Gln Thr Ser Asp Glu	
267 272 277 282	
tta ctt act gag cca aag caa ctc cca gaa aaa tac tct ctt cct gcc	974

Leu Leu Thr Glu Pro Lys Gln Leu Pro Glu Lys Tyr Ser Leu Pro Ala	
283 288 293 298	
tcc cct tct gtc atc ctg ccc atc cag gtt atg ctg act cct ctt cag	1022
Ser Pro Ser Val Ile Leu Pro Ile Gln Val Met Leu Thr Pro Leu Gln	
299 304 309 314	
aag agg ttc agg tat cac ttc aga ggg aac cgg cag act aat gtg tta	1070
Lys Arg Phe Arg Tyr His Phe Arg Gly Asn Arg Gln Thr Asn Val Leu	
315 320 325 330	
agc aag cca gaa tgg tac ttg gct caa gta ctt atg tgg att gga aac	1118
Ser Lys Pro Glu Trp Tyr Leu Ala Gln Val Leu Met Trp Ile Gly Asn	
331 336 341 346	
cat act gaa ttt ctg gat gag aag att cag cca ata tta gac aaa gta	1166
His Thr Glu Phe Leu Asp Glu Lys Ile Gln Pro Ile Leu Asp Lys Val	
347 352 357 362	
ggc tct ttg gta aac gca agg ctt gaa ttt tct cgg ggc ctt atg atg	1214
Gly Ser Leu Val Asn Ala Arg Leu Glu Phe Ser Arg Gly Leu Met Met	
363 368 373 378	
ctg gtt ctt gag aag tta gcc act gat att cct tgt ctg cta tat gat	1262
Leu Val Leu Glu Lys Leu Ala Thr Asp Ile Pro Cys Leu Leu Tyr Asp	
379 384 389 394	
gac aat ctc ttc tgt cat ttg gtg gat gaa gta ctc ttg ttt gaa agg	1310
Asp Asn Leu Phe Cys His Leu Val Asp Glu Val Leu Leu Phe Glu Arg	
395 400 405 410	
gag cta cac agt gtt cat ggc tat cct ggc act ttt gct agt tgt atg	1358
Glu Leu His Ser Val His Gly Tyr Pro Gly Thr Phe Ala Ser Cys Met	
411 416 421 426	
cat att cta tca gag gaa acc tgt ttt cag aga tgg ttg acg gtg gag	1406
His Ile Leu Ser Glu Glu Thr Cys Phe Gln Arg Trp Leu Thr Val Glu	
427 432 437 442	
aga aaa ttt gct ctt caa aaa atg gac tca atg ctt tcc tca gaa gct	1454
Arg Lys Phe Ala Leu Gln Lys Met Asp Ser Met Leu Ser Ser Glu Ala	
443 448 453 458	
gcc tgg gta tcg caa tat aag gat atc act gac gtg gat gaa atg aaa	1502
Ala Trp Val Ser Gln Tyr Lys Asp Ile Thr Asp Val Asp Glu Met Lys	
459 464 469 474	
gtt cca gat tgt gca gaa act ttt atg act cta ctc ttg gtt ata act	1550
Val Pro Asp Cys Ala Glu Thr Phe Met Thr Leu Leu Leu Val Ile Thr	
475 480 485 490	
gac agg tat aaa aat ctt ccc aca gct tcc cga aag ctt cag ttc ctg	1598
Asp Arg Tyr Lys Asn Leu Pro Thr Ala Ser Arg Lys Leu Gln Phe Leu	
491 496 501 506	
gag tta cag aag gac tta gta gat gat ttt agg ata cga tta aca caa	1646
Glu Leu Gln Lys Asp Leu Val Asp Asp Phe Arg Ile Arg Leu Thr Gln	

507	512	517	522	
gtg atg aaa gaa gag	act aga gct tcc ctt	ggc ttt cga tac tgt	gca	1694
Val Met Lys Glu Glu	Thr Arg Ala Ser Leu	Gly Phe Arg Tyr Cys	Ala	
523	528	533	538	
att ctt aat gct gtg	aac tac atc tca aca	gta cta gca gat tgg	gct	1742
Ile Leu Asn Ala Val	Asn Tyr Ile Ser Thr	Val Leu Ala Asp Trp	Ala	
539	544	549	554	
gac aat gtt ttc ttt	cta caa ctt caa cag	gct gca ctg gag gtg	ttt	1790
Asp Asn Val Phe Phe	Leu Gln Leu Gln Gln	Ala Ala Leu Glu Val	Phe	
555	560	565	570	
gca gag aat aat act	ctg agt aaa ttg cag	cta gga cag cta gcc	tct	1838
Ala Glu Asn Asn Thr	Leu Ser Lys Leu Gln	Leu Gly Gln Leu Ala	Ser	
571	576	581	586	
atg gag agc tct gtc	ttt gat gac atg att	aac ctc tta gaa cgt	tta	1886
Met Glu Ser Ser Val	Phe Asp Asp Met Ile	Asn Leu Leu Glu Arg	Leu	
587	592	597	602	
aag cat gat atg ttg	acc cgt caa gta gac	cac gtt ttt aga gaa	gtt	1934
Lys His Asp Met Leu	Thr Arg Gln Val Asp	His Val Phe Arg Glu	Val	
603	608	613	618	
aaa gat gct gca aaa	ttg tat aaa aaa gaa	aga tgg ttg tcc ttg	cca	1982
Lys Asp Ala Ala Lys	Leu Tyr Lys Lys Glu	Arg Trp Leu Ser Leu	Pro	
619	624	629	634	
tct cag tca gag cag	gca gtg atg tcc ctg	tcc agt tcc gct tgc	ccg	2030
Ser Gln Ser Glu Gln	Ala Val Met Ser Leu	Ser Ser Ser Ala Cys	Pro	
635	640	645	650	
ttg ctg ctg acg tta	cga gac cat tta ctt	cag ttg gag cag cag	ctt	2078
Leu Leu Leu Thr Leu	Arg Asp His Leu Leu	Gln Leu Glu Gln Gln	Leu	
651	656	661	666	
tgt ttc tcc tta ttt	aaa att ttc tgg caa	atg ctt gta gag aag	ctg	2126
Cys Phe Ser Leu Phe	Lys Ile Phe Trp Gln	Met Leu Val Glu Lys	Leu	
667	672	677	682	
gat gta tac atc tac	caa gaa ata att ctt	gct aat cac ttc aat	gaa	2174
Asp Val Tyr Ile Tyr	Gln Glu Ile Ile Leu	Ala Asn His Phe Asn	Glu	
683	688	693	698	
gga gga gca gcc cag	ctg cag ttt gat atg	act cgg aat ctt ttc	cct	2222
Gly Gly Ala Ala Gln	Leu Gln Phe Asp Met	Thr Arg Asn Leu Phe	Pro	
699	704	709	714	
ttg ttt tct cac tat	tgc aag aga cca gaa	aat tat ttt aaa cat	ata	2270
Leu Phe Ser His Tyr	Cys Lys Arg Pro Glu	Asn Tyr Phe Lys His	Ile	
715	720	725	730	
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Lys Glu Ala Cys Ile	Val Leu Asn Leu Asn	Val Gly Ser Ala Leu	Leu	
731	736	741	746	

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 Leu Lys Asp Val Leu Gln Ser Ala Ser Gly Gln Leu Pro Ala Thr Ala  
 747 752 757 762

gca tta aat gaa gtt gga att tac aaa ctg gct caa caa gat gtt gag 2414  
 Ala Leu Asn Glu Val Gly Ile Tyr Lys Leu Ala Gln Gln Asp Val Glu  
 763 768 773 778

att cta ctt aat ttg agg aca aat tgg cct aat act gga aaa taa tgt 2462  
 Ile Leu Leu Asn Leu Arg Thr Asn Trp Pro Asn Thr Gly Lys \*  
 779 784 789

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gcaaagcgga ggctgcgacg ggtcctgcag ggggacagtg aggaaagggc cgcctcgtct 180

ccgctcctgg gggaccgcag aaataagaat caaactccac a atg aca acc tat 233  
 Met Thr Thr Tyr  
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ttg gaa ttc att caa caa aat gaa gaa cga gat gga gtc cga ttt agt 281  
 Leu Glu Phe Ile Gln Gln Asn Glu Glu Arg Asp Gly Val Arg Phe Ser  
 5 10 15 20

tgg aat gtt tgg cca tca agt cga ctg gaa gct aca aga atg gtt gtt 329  
 Trp Asn Val Trp Pro Ser Ser Arg Leu Glu Ala Thr Arg Met Val Val  
 21 26 31 36

cct gtg gca gcc ctg ttt aca cca ctg aaa gag aga cct gac tta cca	377
Pro Val Ala Ala Leu Phe Thr Pro Leu Lys Glu Arg Pro Asp Leu Pro	
37 42 47 52	
cct att caa tat gaa cct gtt ctg tgt agt agg acc act tgc cgt gca	425
Pro Ile Gln Tyr Glu Pro Val Leu Cys Ser Arg Thr Thr Cys Arg Ala	
53 58 63 68	
gtt ttg aat cct tta tgt caa gtg gat tat cga gca aaa ctt tgg gct	473
Val Leu Asn Pro Leu Cys Gln Val Asp Tyr Arg Ala Lys Leu Trp Ala	
69 74 79 84	
tgc aac ttt tgt tac caa agg aat cag ttt cca cct agt tat gct ggt	521
Cys Asn Phe Cys Tyr Gln Arg Asn Gln Phe Pro Pro Ser Tyr Ala Gly	
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Ile Ser Glu Leu Asn Gln Pro Ala Glu Leu Leu Pro Gln Phe Ser Ser	
101 106 111 116	
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Ile Glu Tyr Val Val Leu Arg Gly Pro Gln Met Pro Leu Ile Phe Leu	
117 122 127 132	
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Tyr Val Val Asp Thr Cys Met Glu Asp Glu Asp Leu Gln Ala Leu Lys	
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Glu Ser Met Gln Met Ser Leu Ser Leu Leu Pro Pro Thr Ala Leu Val	
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Gly Leu Ile Thr Phe Gly Arg Met Val Gln Val His Glu Leu Gly Cys	
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gaa ggc att tca aaa agc tat gtc ttc aga gga aca aaa gat atg tct	809
Glu Gly Ile Ser Lys Ser Tyr Val Phe Arg Gly Thr Lys Asp Met Ser	
181 186 191 196	
gcc aaa caa ctg cag gaa atg ctg ggg ctc tct aaa gta cca gtt act	857
Ala Lys Gln Leu Gln Glu Met Leu Gly Leu Ser Lys Val Pro Val Thr	
197 202 207 212	
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Gln Ala Thr Arg Gly Pro Gln Val Gln Gln Pro Pro Pro Ser Asn Arg	
213 218 223 228	
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Phe Leu Gln Pro Val Gln Lys Ile Asp Met Asn Leu Thr Asp Leu Leu	
229 234 239 244	
gga gaa ctc cag cga gac cct tgg cct gta cca cag gga aag aga cct	1001
Gly Glu Leu Gln Arg Asp Pro Trp Pro Val Pro Gln Gly Lys Arg Pro	
245 250 255 260	

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Cys Thr Phe Pro Asn Thr Gly Ala Arg Ile Met Met Phe Ile Gly Gly	
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Pro Ala Thr Gln Gly Pro Gly Met Val Val Gly Asp Glu Leu Lys Thr	
293 298 303 308	
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Pro Ile Arg Ser Trp His Asp Ile Asp Lys Asp Asn Ala Lys Tyr Val	
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Lys Lys Gly Thr Lys His Phe Glu Ala Leu Ala Asn Arg Ala Ala Thr	
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Thr Gly His Val Ile Asp Ile Tyr Ala Cys Ala Leu Asp Gln Thr Gly	
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ctc ctg gag atg aaa tgc tgt ccc aac ctt act gga gga tac atg gta	1337
Leu Leu Glu Met Lys Cys Cys Pro Asn Leu Thr Gly Gly Tyr Met Val	
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Met Gly Asp Ser Phe Asn Thr Ser Leu Phe Lys Gln Thr Phe Gln Arg	
373 378 383 388	
gtc ttt acc aaa gac atg cat gga cag ttt aaa atg ggc ttt ggt ggt	1433
Val Phe Thr Lys Asp Met His Gly Gln Phe Lys Met Gly Phe Gly Gly	
389 394 399 404	
acg cta gaa ata aag acc tca agg gaa ata aag att tca gga gct att	1481
Thr Leu Glu Ile Lys Thr Ser Arg Glu Ile Lys Ile Ser Gly Ala Ile	
405 410 415 420	
gga ccc tgt gtg tca ctc aat tct aaa gga ccc tgt gtg tct gaa aat	1529
Gly Pro Cys Val Ser Leu Asn Ser Lys Gly Pro Cys Val Ser Glu Asn	
421 426 431 436	
gag ata gga aca ggt ggc aca tgt cag tgg aag ata tgt gga ctt agt	1577
Glu Ile Gly Thr Gly Gly Thr Cys Gln Trp Lys Ile Cys Gly Leu Ser	
437 442 447 452	
ccc act aca acc tta gcc ata tat ttt gag gtt gtc aat cag cat aat	1625
Pro Thr Thr Thr Leu Ala Ile Tyr Phe Glu Val Val Asn Gln His Asn	
453 458 463 468	
gct cca att cct caa gga ggg cgt ggt gca atc cag ttt gtg act cag	1673
Ala Pro Ile Pro Gln Gly Gly Arg Gly Ala Ile Gln Phe Val Thr Gln	
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tat cag cat tca agt ggg cag aga cgc atc cga gtg acc acc att gct	1721



Tyr Gln His Ser Ser Gly Gln Arg Arg Ile Arg Val Thr Thr Ile Ala	
485 490 495 500	
agg aac tgg gca gat gct caa act caa atc caa aac att gct gca tct	1769
Arg Asn Trp Ala Asp Ala Gln Thr Gln Ile Gln Asn Ile Ala Ala Ser	
501 506 511 516	
ttt gac cag gag gca gct gcc att ctt atg gcc cgg cta gca ata tat	1817
Phe Asp Gln Glu Ala Ala Ala Ile Leu Met Ala Arg Leu Ala Ile Tyr	
517 522 527 532	
aga gca gaa aca gaa gaa ggt cca gat gtg ctt agg tgg ctg gac aga	1865
Arg Ala Glu Thr Glu Glu Gly Pro Asp Val Leu Arg Trp Leu Asp Arg	
533 538 543 548	
cag ctc att cga ctg tgt cag aaa ttt gga gaa tat cat aaa gat gac	1913
Gln Leu Ile Arg Leu Cys Gln Lys Phe Gly Glu Tyr His Lys Asp Asp	
549 554 559 564	
cca agt tcc ttc aga ttt tca gaa act ttc tcc ctt tat cca cag ttt	1961
Pro Ser Ser Phe Arg Phe Ser Glu Thr Phe Ser Leu Tyr Pro Gln Phe	
565 570 575 580	
atg ttt cat tta aga aga tct tct ttc ctg caa gtt ttt aac aat agt	2009
Met Phe His Leu Arg Arg Ser Ser Phe Leu Gln Val Phe Asn Asn Ser	
581 586 591 596	
cct gat gag agt tca tat tat cgt cac cat ttt atg cgt caa gat ctg	2057
Pro Asp Glu Ser Ser Tyr Tyr Arg His His Phe Met Arg Gln Asp Leu	
597 602 607 612	
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Thr Gln Ser Leu Ile Met Ile Gln Pro Ile Leu Tyr Ala Tyr Ser Phe	
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Ser Gly Pro Pro Glu Gln Val Leu Leu Asp Ser Ser Ser Ile Leu Ala	
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Asp Arg Ile Leu Leu Met Asp Thr Phe Phe Gln Ile Leu Ile Tyr His	
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Gly Glu Thr Ile Ala Gln Trp Arg Lys Ser Gly Tyr Gln Asp Met Pro	
661 666 671 676	
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Glu Tyr Glu Asn Phe Arg His Leu Leu Gln Ala Pro Val Asp Asp Ala	
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725	730	735	740	
cct att ctt aca gat gat gtt agt tta caa gtg ttt atg gat cac ttg				2489
Pro Ile Leu Thr Asp Asp Val Ser Leu Gln Val Phe Met Asp His Leu				
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aag aaa ctt gct gtg tcc agt gct gct tga a gtgctaataa tgttaaagac				2540
Lys Lys Leu Ala Val Ser Ser Ala Ala *				
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aaccaacaga tattgctcta tattttttgt attagtatgg tttgagacaa catatggaaa				2660
atgttcacat ttgtagatta agctggaatt ataatgagag caataagaac aaatttattt				2720
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                                   Met Leu Val Leu Val Val Ser
                                   1                               5

ccg tgg tct gcg gcc cgg gga gtg ctt cga aac tac tgg gag cga ctg      160
Pro Trp Ser Ala Ala Arg Gly Val Leu Arg Asn Tyr Trp Glu Arg Leu
  8                               13                               18                               23

cta cgg aag ctt ccg cag agc cgg ccg ggc ttt ccc agt cct ccg tgg      208
Leu Arg Lys Leu Pro Gln Ser Arg Pro Gly Phe Pro Ser Pro Pro Trp
 24                               29                               34                               39

gga cca gca tta gca gta cag ggc cca gcc atg ttt aca gag cca gca      256
Gly Pro Ala Leu Ala Val Gln Gly Pro Ala Met Phe Thr Glu Pro Ala
 40                               45                               50                               55

aat gat acc agt gga agt aaa gag aat tcc agc ctt ttg gac agt atc      304
Asn Asp Thr Ser Gly Ser Lys Glu Asn Ser Ser Leu Leu Asp Ser Ile
 56                               61                               66                               71

ttt tgg atg gca gct ccc aaa aat aga cgc acc att gaa gtt aac cgg      352
Phe Trp Met Ala Ala Pro Lys Asn Arg Arg Thr Ile Glu Val Asn Arg
 72                               77                               82                               87

tgt agg aga aga aat ccg cag aag ctt att aaa gtt aag aac aac ata      400
Cys Arg Arg Arg Asn Pro Gln Lys Leu Ile Lys Val Lys Asn Asn Ile
 88                               93                               98                               103

gac gtt tgt cct gaa tgt ggt cac ctg aaa cag aaa cat gtc ctt tgt      448
Asp Val Cys Pro Glu Cys Gly His Leu Lys Gln Lys His Val Leu Cys
104                               109                               114                               119

gcc tac tgc tat gaa aag gtg tgc aag gag act gca gaa atc aga cga      496
Ala Tyr Cys Tyr Glu Lys Val Cys Lys Glu Thr Ala Glu Ile Arg Arg
120                               125                               130                               135

cag ata ggg aag caa gaa ggg ggc cct ttt aag gct ccc acc ata gag      544
Gln Ile Gly Lys Gln Glu Gly Gly Pro Phe Lys Ala Pro Thr Ile Glu
136                               141                               146                               151

act gtg gtg ctg tac acg gga gag aca ccg tct gaa caa gat cag ggc      592

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 Lys Arg Ile Ile Glu Arg Asp Arg Lys Arg Pro Ser Trp Phe Thr Gln  
 168 173 178 183

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 Asn \*  
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aattttgttt atccaaaggc tcaatggatt atgtttctat tatatacaag gttttaagta 876

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ccaggcctga ggac atg agg cgg ccg gcg gcg gtg ccg ctc ctg ctg ctg 170  
 Met Arg Arg Pro Ala Ala Val Pro Leu Leu Leu Leu  
 1 5 10

ctg tgt ttt ggg tct cag agg gcc aag gca gca aca gcc tgt ggt cgc 218  
 Leu Cys Phe Gly Ser Gln Arg Ala Lys Ala Ala Thr Ala Cys Gly Arg  
 13 18 23 28

ccc agg atg ctg aac cga atg gtg ggc ggg cag gac acg cag gag ggc 266  
 Pro Arg Met Leu Asn Arg Met Val Gly Gly Gln Asp Thr Gln Glu Gly  
 29 34 39 44

gag tgg ccc tgg caa gtc agc atc cag cgc aac gga agc cac ttc tgc 314  
 Glu Trp Pro Trp Gln Val Ser Ile Gln Arg Asn Gly Ser His Phe Cys  
 45 50 55 60

ggg ggc agc ctc atc gcg gag cag tgg gtc ctg acg gct gcg cac tgc 362  
 Gly Gly Ser Leu Ile Ala Glu Gln Trp Val Leu Thr Ala Ala His Cys  
 61 66 71 76

ttc cgc aac acc tct gag acg tcc ctg tac cag gtc ctg ctg ggg gca	410
Phe Arg Asn Thr Ser Glu Thr Ser Leu Tyr Gln Val Leu Leu Gly Ala	
77 82 87 92	
agg cag cta gtg cag ccg gga cca cac gct atg tat gcc cgg gtg agg	458
Arg Gln Leu Val Gln Pro Gly Pro His Ala Met Tyr Ala Arg Val Arg	
93 98 103 108	
cag gtg gag agc aac ccc ctg tac cag ggc acg gcc tcc agc gct gac	506
Gln Val Glu Ser Asn Pro Leu Tyr Gln Gly Thr Ala Ser Ser Ala Asp	
109 114 119 124	
gtg gcc ctg gtg gag ctg gag gca cca gtg ccc ttc acc aat tac atc	554
Val Ala Leu Val Glu Leu Glu Ala Pro Val Pro Phe Thr Asn Tyr Ile	
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Pro Glu Pro Arg Ile Leu Gln Lys Leu Ala Val Pro Ile Ile Asp Thr	
173 178 183 188	
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Pro Lys Cys Thr Leu Leu Tyr Ser Lys Asp Thr Glu Phe Gly Tyr Gln	
189 194 199 204	
ccc aaa acc atc aag aat gac atg ctg tgc gcc ggc ttc gag gag ggc	794
Pro Lys Thr Ile Lys Asn Asp Met Leu Cys Ala Gly Phe Glu Glu Gly	
205 210 215 220	
aag aag gat gcc tgc aag ggc gac tcg ggc ggc ccc ctg gtg tgc ctc	842
Lys Lys Asp Ala Cys Lys Gly Asp Ser Gly Gly Pro Leu Val Cys Leu	
221 226 231 236	
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Val Gly Gln Ser Trp Leu Gln Ala Gly Val Ile Ser Trp Gly Glu Gly	
237 242 247 252	
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Cys Ala Arg Gln Asn Arg Pro Gly Val Tyr Ile Arg Val Thr Ala His	
253 258 263 268	
cac aac tgg atc cat cgg atc atc ccc aaa ctg cag ttc cag cca gcg	986
His Asn Trp Ile His Arg Ile Ile Pro Lys Leu Gln Phe Gln Pro Ala	
269 274 279 284	
agg ttg ggc ggc cag aag tga ga cccccggggc caggagcccc ttgagcagag	1039
Arg Leu Gly Gly Gln Lys *	
285 290	

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Met Val Arg Ala Arg His Gln Pro Gly Gly Leu Cys  
1 5 10  
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Leu Leu Leu Leu Leu Leu Cys Gln Phe Met Glu Asp Arg Ser Ala Gln  
13 18 23 28  
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Ala Gly Asn Cys Trp Leu Arg Gln Ala Lys Asn Gly Arg Cys Gln Val  
29 34 39 44  
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45 50 55 60  
ctg agc acc tcg tgg acc gag gag gac gtg aat gac aac aca ctc ttc 540  
Leu Ser Thr Ser Trp Thr Glu Glu Asp Val Asn Asp Asn Thr Leu Phe  
61 66 71 76  
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Lys Trp Met Ile Phe Asn Gly Gly Ala Pro Asn Cys Ile Pro Cys Lys  
77 82 87 92  
gaa acg tgt gag aac gtg gac tgt gga cct ggg aaa aaa tgc cga atg 636  
Glu Thr Cys Glu Asn Val Asp Cys Gly Pro Gly Lys Lys Cys Arg Met  
93 98 103 108

aac aag aag aac aaa ccc cgc tgc gtc tgc gcc ccg gat tgt tcc aac	684
Asn Lys Lys Asn Lys Pro Arg Cys Val Cys Ala Pro Asp Cys Ser Asn	
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Ile Thr Trp Lys Gly Pro Val Cys Gly Leu Asp Gly Lys Thr Tyr Arg	
125 130 135 140	
aat gaa tgt gca ctc cta aag gca aga tgt aaa gag cag cca gaa ctg	780
Asn Glu Cys Ala Leu Leu Lys Ala Arg Cys Lys Glu Gln Pro Glu Leu	
141 146 151 156	
gaa gtc cag tac caa ggc aga tgt aaa aag act tgt cgg gat gtt ttc	828
Glu Val Gln Tyr Gln Gly Arg Cys Lys Lys Thr Cys Arg Asp Val Phe	
157 162 167 172	
tgt cca ggc agc tcc aca tgt gtg gtg gac cag acc aat aat gcc tac	876
Cys Pro Gly Ser Ser Thr Cys Val Val Asp Gln Thr Asn Asn Ala Tyr	
173 178 183 188	
tgt gtg acc tgt aat cgg att tgc cca gag cct gct tcc tct gag caa	924
Cys Val Thr Cys Asn Arg Ile Cys Pro Glu Pro Ala Ser Ser Glu Gln	
189 194 199 204	
tat ctc tgt ggg aat gat gga gtc acc tac tcc agt gcc tgc cac ctg	972
Tyr Leu Cys Gly Asn Asp Gly Val Thr Tyr Ser Ser Ala Cys His Leu	
205 210 215 220	
aga aag gct acc tgc ctg ctg ggc aga tct att gga tta gcc tat gag	1020
Arg Lys Ala Thr Cys Leu Leu Gly Arg Ser Ile Gly Leu Ala Tyr Glu	
221 226 231 236	
gga aag tgt atc aaa gca aag tcc tgt gaa gat atc cag tgc act ggt	1068
Gly Lys Cys Ile Lys Ala Lys Ser Cys Glu Asp Ile Gln Cys Thr Gly	
237 242 247 252	
ggg aaa aaa tgt tta tgg gat ttc aag gtt ggg aga ggc cgg tgt tcc	1116
Gly Lys Lys Cys Leu Trp Asp Phe Lys Val Gly Arg Gly Arg Cys Ser	
253 258 263 268	
ctc tgt gat gag ctg tgc cct gac agt aag tcg gat gag cct gtc tgt	1164
Leu Cys Asp Glu Leu Cys Pro Asp Ser Lys Ser Asp Glu Pro Val Cys	
269 274 279 284	
gcc agt gac aat gcc act tat gcc agc gag tgt gcc atg aag gaa gct	1212
Ala Ser Asp Asn Ala Thr Tyr Ala Ser Glu Cys Ala Met Lys Glu Ala	
285 290 295 300	
gcc tgc tcc tca ggt gtg cta ctg gaa gta aag cac tcc gga tct tgc	1260
Ala Cys Ser Ser Gly Val Leu Leu Glu Val Lys His Ser Gly Ser Cys	
301 306 311 316	
aac tcc att tcg gaa gac acc gag gaa gag gag gaa gat gaa gac cag	1308
Asn Ser Ile Ser Glu Asp Thr Glu Glu Glu Glu Glu Asp Glu Asp Gln	
317 322 327 332	
gac tac agc ttt cct ata tct tct att cta gag tgg taa actctctata	1357

Asp Tyr Ser Phe Pro Ile Ser Ser Ile Leu Glu Trp \*  
 333 338 343

agtgttcagt gttgacatag cctttgtgca aaaaaaaaaa aa 1399

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 <212> DNA  
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<400> 433

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cgcggtaggc tgccagccag gctgggaaag cggtggtagc tggttgggtt gctggggctc 120

ggttgttgta gtcgcg atg ttc ttc tcc gag gcc aga gcc agg tcc cgg 169  
 Met Phe Phe Ser Glu Ala Arg Ala Arg Ser Arg  
 1 5

acg tgg gaa gcc agt ccc tcc gaa cac agg aag tgg gtg gaa gta ttt 217  
 Thr Trp Glu Ala Ser Pro Ser Glu His Arg Lys Trp Val Glu Val Phe  
 12 17 22 27

aaa gca tgt gat gaa gat cac aaa gga tat ctc agc aga gag gac ttt 265  
 Lys Ala Cys Asp Glu Asp His Lys Gly Tyr Leu Ser Arg Glu Asp Phe  
 28 33 38 43

aaa act gct gtt gta atg ctg ttt ggg tac aag ccc tcc aag ata gaa 313  
 Lys Thr Ala Val Val Met Leu Phe Gly Tyr Lys Pro Ser Lys Ile Glu  
 44 49 54 59

gtg gat tct gtg atg tct tca ata aat cca aat act tct ggt ata tta 361  
 Val Asp Ser Val Met Ser Ser Ile Asn Pro Asn Thr Ser Gly Ile Leu  
 60 65 70 75

ctc gag ggg ttt tta aat att gtc agg aaa aag aag gaa gct caa cga 409  
 Leu Glu Gly Phe Leu Asn Ile Val Arg Lys Lys Lys Glu Ala Gln Arg  
 76 81 86 91

tat cgg aac gaa gta aga cac atc ttc aca gcc ttt gac acc tac tat 457  
 Tyr Arg Asn Glu Val Arg His Ile Phe Thr Ala Phe Asp Thr Tyr Tyr  
 92 97 102 107

cgt gga ttt tta act ttg gaa gat ttc aaa aaa gca ttt agg cag gtg 505  
 Arg Gly Phe Leu Thr Leu Glu Asp Phe Lys Lys Ala Phe Arg Gln Val  
 108 113 118 123

gct ccc aaa tta ccg gaa agg act gtt ctt gag gta ttc agg gaa gta 553  
 Ala Pro Lys Leu Pro Glu Arg Thr Val Leu Glu Val Phe Arg Glu Val  
 124 129 134 139



gat cga gat tca gat ggt cac gtc agc ttt aga gac ttt gaa tat gcc 601  
 Asp Arg Asp Ser Asp Gly His Val Ser Phe Arg Asp Phe Glu Tyr Ala  
 140 145 150 155

ctg aac tat gga cag aag gaa gcc taa ctatt gtgaactact tttggtaact 653  
 Leu Asn Tyr Gly Gln Lys Glu Ala \*

156 161

ctggggagat caatagattg taatgtcagc agactctact ctactaatga tgtcatgcta 713

cagacttgtg attaaacatt taaaaatttt taaaaaaaaa aaaaaa 759

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 <212> DNA  
 <213> Homo sapiens

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ccgggttttc tgccccgttc ccccggggtg ctgtgggcta ccgagcccc atg tcg 115  
 Met Ser  
 1

gcc agc cgg ccc cag ggc ccc acg acc cca tgg tgt ctc cca aga agg 163  
 Ala Ser Arg Pro Gln Gly Pro Thr Thr Pro Trp Cys Leu Pro Arg Arg  
 3 8 13 18

tac atg aag cac aag cgc gac gat ggg ccc gag aag cag gag gac gag 211  
 Tyr Met Lys His Lys Arg Asp Asp Gly Pro Glu Lys Gln Glu Asp Glu  
 19 24 29 34

gcg gtg gac gtg acg ccg gtg atg acc tgc gtg ttt gtg gtg atg tgc 259  
 Ala Val Asp Val Thr Pro Val Met Thr Cys Val Phe Val Val Met Cys  
 35 40 45 50

tgc tcc atg ctg gtg ctg ctc tac tat ttc tac gac ctc ctc gtg tac 307  
 Cys Ser Met Leu Val Leu Leu Tyr Tyr Phe Tyr Asp Leu Leu Val Tyr  
 51 56 61 66

gtg gtc atc ggg atc ttc tgc ctg gcc tcc gcc acc ggc ctc tac agc 355  
 Val Val Ile Gly Ile Phe Cys Leu Ala Ser Ala Thr Gly Leu Tyr Ser  
 67 72 77 82

tgc ctg gcg ccc tgt gtg cgg cgg ctg cct tcg gca agt gca ggt gag 403  
 Cys Leu Ala Pro Cys Val Arg Arg Leu Pro Ser Ala Ser Ala Gly Glu  
 83 88 93 98

tct gcc ctg ctg gcc ccg acg atc ccc aac aac agc ctg ccc tac ttc 451

Ser	Ala	Leu	Leu	Ala	Pro	Thr	Ile	Pro	Asn	Asn	Ser	Leu	Pro	Tyr	Phe		
99					104				109						114		
cac	aag	cgc	ccg	cag	gcc	cgt	atg	ctg	ctc	ctg	gcg	ctc	ttc	tgc	gtg	499	
His	Lys	Arg	Pro	Gln	Ala	Arg	Met	Leu	Leu	Leu	Ala	Leu	Phe	Cys	Val		
115					120				125						130		
gcc	gtc	agc	gtg	gtg	tgg	ggc	gtc	ttc	cgc	aac	gag	gac	cag	tgg	gcc	547	
Ala	Val	Ser	Val	Val	Trp	Gly	Val	Phe	Arg	Asn	Glu	Asp	Gln	Trp	Ala		
131					136				141						146		
tgg	gtc	ctc	cag	gat	gcc	ctg	ggc	atc	gcc	ttc	tgc	ctc	tac	atg	ctg	595	
Trp	Val	Leu	Gln	Asp	Ala	Leu	Gly	Ile	Ala	Phe	Cys	Leu	Tyr	Met	Leu		
147					152				157						162		
aag	acc	atc	cgt	ctg	ccc	acc	ttc	aag	gcc	tgc	acg	ctg	ctg	ctg	ctg	643	
Lys	Thr	Ile	Arg	Leu	Pro	Thr	Phe	Lys	Ala	Cys	Thr	Leu	Leu	Leu	Leu		
163					168				173						178		
gtg	ctg	ttc	ctc	tac	gac	atc	ttc	ttc	gtg	ttc	atc	acg	ccc	ttc	ctg	691	
Val	Leu	Phe	Leu	Tyr	Asp	Ile	Phe	Phe	Val	Phe	Ile	Thr	Pro	Phe	Leu		
179					184				189						194		
acc	aag	agt	ggg	agc	agc	atc	atg	gtg	gag	gtg	gcc	act	ggg	ccc	tcg	739	
Thr	Lys	Ser	Gly	Ser	Ser	Ile	Met	Val	Glu	Val	Ala	Thr	Gly	Pro	Ser		
195					200				205						210		
gac	tca	gcc	acc	cgt	gag	aag	ctg	ccc	atg	gtc	ctg	aag	gtg	ccc	agg	787	
Asp	Ser	Ala	Thr	Arg	Glu	Lys	Leu	Pro	Met	Val	Leu	Lys	Val	Pro	Arg		
211					216				221						226		
ctg	aac	tcc	tca	cct	ctg	gcc	ctg	tgt	gac	cgg	ccc	ttc	tcc	ctc	ctg	835	
Leu	Asn	Ser	Ser	Pro	Leu	Ala	Leu	Cys	Asp	Arg	Pro	Phe	Ser	Leu	Leu		
227					232				237						242		
ggg	ttc	gga	gac	att	ttg	gtg	cca	ggg	ctg	ctg	gtg	gcc	tac	tgc	cac	883	
Gly	Phe	Gly	Asp	Ile	Leu	Val	Pro	Gly	Leu	Leu	Val	Ala	Tyr	Cys	His		
243					248				253						258		
agg	ttt	gac	atc	cag	gta	cag	tcc	tcc	agg	gta	tac	ttc	gtg	gcc	tgc	931	
Arg	Phe	Asp	Ile	Gln	Val	Gln	Ser	Ser	Arg	Val	Tyr	Phe	Val	Ala	Cys		
259					264				269						274		
acc	atc	gcc	tat	ggc	gtt	ggc	ctc	ctt	gtg	aca	ttc	gtg	gca	ctg	gcc	979	
Thr	Ile	Ala	Tyr	Gly	Val	Gly	Leu	Leu	Val	Thr	Phe	Val	Ala	Leu	Ala		
275					280				285						290		
ctg	atg	cag	cgt	ggc	cag	ccc	gct	ctc	ctc	tac	ctg	gtg	ccc	tgc	acg	1027	
Leu	Met	Gln	Arg	Gly	Gln	Pro	Ala	Leu	Leu	Tyr	Leu	Val	Pro	Cys	Thr		
291					296				301						306		
ctg	gtg	acg	agc	tgc	gct	gtg	gcg	ctc	tgg	cgc	cgg	gag	ctg	ggc	gtg	1075	
Leu	Val	Thr	Ser	Cys	Ala	Val	Ala	Leu	Trp	Arg	Arg	Glu	Leu	Gly	Val		
307					312				317						322		
ttc	tgg	acg	ggc	agc	ggc	ttt	gcg	aaa	gtc	cta	cct	cca	tct	ccg	tgg	1123	
Phe	Trp	Thr	Gly	Ser	Gly	Phe	Ala	Lys	Val	Leu	Pro	Pro	Ser	Pro	Trp		

323	328	333	338	
gcc cca gca cca gcc gac ggc ccg cag cct ccc aaa gac tct gcc acg				1171
Ala Pro Ala Pro Ala Asp Gly Pro Gln Pro Pro Lys Asp Ser Ala Thr				
339	344	349	354	
cca ctc tcc ccg cag ccg ccc agc gaa gaa cca gcc aca tcc ccc tgg				1219
Pro Leu Ser Pro Gln Pro Pro Ser Glu Glu Pro Ala Thr Ser Pro Trp				
355	360	365	370	
cct gct gag cag tcc cca aaa tca cgc acg tcc gag gag atg ggg gct				1267
Pro Ala Glu Gln Ser Pro Lys Ser Arg Thr Ser Glu Glu Met Gly Ala				
371	376	381	386	
gga gcc ccc atg cgg gag cct ggg agc cca gct gaa tcc gag ggc cgg				1315
Gly Ala Pro Met Arg Glu Pro Gly Ser Pro Ala Glu Ser Glu Gly Arg				
387	392	397	402	
gac cag gcc cag ccg tcc ccg gta acc cag cct ggc gcc tcg gcc tag				1363
Asp Gln Ala Gln Pro Ser Pro Val Thr Gln Pro Gly Ala Ser Ala *				
403	408	413	418	
gggaggggtg agacgctcgc tgccgtgccc gccacaccaa gatgttgggg ctgcctggcg				1423
cccactggag acagacagac agacgcctgt cccccgggac cgaggcctgt gccgtcccca				1483
cccgccccaa catggtgctc atccttgccg agaccctgc agtcctgtgcc cgcgcccagc				1543
ccagctgccc cggtgcacg cctgctgctc ccagctcgcc cggtgcccac aagctctctg				1603
cggtgccatc ctccccaccg gggtccgtcc tcgcaggccc tgcccggcct ctctgcagac				1663
cctcaagcgt cgtctgcatg agtgagcagg cgtgggtgga ctctggccgc ggccacactt				1723
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gagccctgg gaggtttgga agctgcctcc aagcctagga cacggaccgg tggccggggc				1903
ggcctctggc ccctgacgct ggctgagaca ggcccgtggg gcgggggtttt ggggcgtgaa				1963
caaggctggc agtaagtgga caagctgctc ccctggctaa ggccctgccc tgccctcagc				2023
cagaggtgcc tggccatgcc tgcacactcc tccccatttt aataaatggg cgcaacttct				2083
agaagtcttg ctggtgccac ctggtggggg ggacgtctct cagactgccc ttctgacaag				2143
caggggtggg cgccaggcag gctgggtcag gccctcaggg gtccctggag ccctgggagg				2203
gagggactgg gtcgtgggag gtccctggtag ctcccggcac ccaacctcgc ttcccgtgtg				2263
ggccccgtgt tgcttttctg ctgagagggg cttgggcctc ggttctccct gtggcagcgg				2323
cattggtgcc tgggttctta accctctgga ccagcagct aggagcttct ggaacccacg				2383
aggacatctg ccactggcat ggtctactca ctgatggggg cctcctgact ccagggcaga				2443

gacgtccgtg cgggaactga ccgaggcgtg gccccaggcc ccggcatcct cccctcgctg 2503  
cacgtggtca cttccgaagc agcgctccct gtggccgcag agacagagcc cgcaccctgg 2563  
ctgtctgtgg tgccctgggccc ccagctcccc cccgccaccc gccctgttga gtgcgggctc 2623  
caga 2627

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<212> DNA  
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<220>  
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taaacccttg gaccccttg ttccctcagc tctaagggcc gcg atg ttg tac cta 175  
Met Leu Tyr Leu  
1  
gaa gac tat ctg gaa atg att gag cag ctt cct atg gat ctg cgg gac 223  
Glu Asp Tyr Leu Glu Met Ile Glu Gln Leu Pro Met Asp Leu Arg Asp  
5 10 15 20  
cgc ttc acg gaa atg cgc gag atg gac ctg cag gtg cag aat gca atg 271  
Arg Phe Thr Glu Met Arg Glu Met Asp Leu Gln Val Gln Asn Ala Met  
21 26 31 36  
gat caa cta gaa caa aga gtc agt gaa ttc ttt atg aat gca aag aaa 319  
Asp Gln Leu Glu Gln Arg Val Ser Glu Phe Phe Met Asn Ala Lys Lys  
37 42 47 52  
aat aaa cct gag tgg agg gaa gag caa atg gca tcc atc aaa aaa gac 367  
Asn Lys Pro Glu Trp Arg Glu Glu Gln Met Ala Ser Ile Lys Lys Asp  
53 58 63 68  
tac tat aaa gct ttg gaa gat gca gat gag aag gtt cag ttg gca aac 415  
Tyr Tyr Lys Ala Leu Glu Asp Ala Asp Glu Lys Val Gln Leu Ala Asn  
69 74 79 84  
cag ata tat gac ttg gta gat cga cac ttg aga aag ctg gat cag gaa 463  
Gln Ile Tyr Asp Leu Val Asp Arg His Leu Arg Lys Leu Asp Gln Glu  
85 90 95 100  
ctg gct aag ttt aaa atg gag ctg gaa gct gat aat gct gga att aca 511  
Leu Ala Lys Phe Lys Met Glu Leu Glu Ala Asp Asn Ala Gly Ile Thr  
101 106 111 116

gaa ata tta gag agg cga tct ttg gaa tta gac act cct tca cag cca	559
Glu Ile Leu Glu Arg Arg Ser Leu Glu Leu Asp Thr Pro Ser Gln Pro	
117 122 127 132	
gtg aac aat cac cat gct cat tca cat act cca gtg gaa aaa agg aaa	607
Val Asn Asn His His Ala His Ser His Thr Pro Val Glu Lys Arg Lys	
133 138 143 148	
tat aat cca act tct cac cat acg aca aca gat cat att cct gaa aag	655
Tyr Asn Pro Thr Ser His His Thr Thr Thr Asp His Ile Pro Glu Lys	
149 154 159 164	
aaa ttt aaa tct gaa gct ctt cta tcc acc ctt acg tca gat gcc tct	703
Lys Phe Lys Ser Glu Ala Leu Leu Ser Thr Leu Thr Ser Asp Ala Ser	
165 170 175 180	
aag gaa aat aca cta ggt tgt cga aat aat aat tcc aca gcc tct tct	751
Lys Glu Asn Thr Leu Gly Cys Arg Asn Asn Asn Ser Thr Ala Ser Ser	
181 186 191 196	
aac aat gcc tac aat gtg aat tcc tcc caa cct ctg gga tcc tat aac	799
Asn Asn Ala Tyr Asn Val Asn Ser Ser Gln Pro Leu Gly Ser Tyr Asn	
197 202 207 212	
att ggc tcg tta tct tca gga act ggt gca ggg gca att acc atg gca	847
Ile Gly Ser Leu Ser Ser Gly Thr Gly Ala Gly Ala Ile Thr Met Ala	
213 218 223 228	
gct gct caa gca gtt cag gct aca gct cag atg aag gag gga cga aga	895
Ala Ala Gln Ala Val Gln Ala Thr Ala Gln Met Lys Glu Gly Arg Arg	
229 234 239 244	
aca tca agt tta aaa gcc agt tat gaa gca ttt aag aat aat gac ttt	943
Thr Ser Ser Leu Lys Ala Ser Tyr Glu Ala Phe Lys Asn Asn Asp Phe	
245 250 255 260	
cag ttg gga aaa gaa ttt tca atg gcc agg gaa aca gtt ggc tat tca	991
Gln Leu Gly Lys Glu Phe Ser Met Ala Arg Glu Thr Val Gly Tyr Ser	
261 266 271 276	
tca tct tcg gca ctt atg aca aca tta aca cag aat gcc agt tca tca	1039
Ser Ser Ser Ala Leu Met Thr Thr Leu Thr Gln Asn Ala Ser Ser Ser	
277 282 287 292	
gca gcc gac tca cgg agt ggt cga aag agc aaa aac aac aac aag tct	1087
Ala Ala Asp Ser Arg Ser Gly Arg Lys Ser Lys Asn Asn Asn Lys Ser	
293 298 303 308	
tca agc cag cag tca tca tct tcc tcc tcc tct tct tcc tta tca tcg	1135
Ser Ser Gln Gln Ser Ser Ser Ser Ser Ser Ser Ser Ser Ser Leu Ser Ser	
309 314 319 324	
tgt tct tca tca tca act gtt gta caa gaa atc tct caa caa aca act	1183
Cys Ser Ser Ser Ser Thr Val Val Gln Glu Ile Ser Gln Gln Thr Thr	
325 330 335 340	

gta gtg cca gaa tct gat tca aat agt cag gtt gat tgg act tac gac	1231
Val Val Pro Glu Ser Asp Ser Asn Ser Gln Val Asp Trp Thr Tyr Asp	
341 346 351 356	
cca aat gaa cct cga tac tgc att tgt aat cag gta tct tat ggt gag	1279
Pro Asn Glu Pro Arg Tyr Cys Ile Cys Asn Gln Val Ser Tyr Gly Glu	
357 362 367 372	
atg gtg gga tgt gat aac caa gat tgc cct ata gaa tgg ttc cat tat	1327
Met Val Gly Cys Asp Asn Gln Asp Cys Pro Ile Glu Trp Phe His Tyr	
373 378 383 388	
ggc tgc gtt gga ttg aca gag gca cca aaa ggc aaa tgg tac tgt cca	1375
Gly Cys Val Gly Leu Thr Glu Ala Pro Lys Gly Lys Trp Tyr Cys Pro	
389 394 399 404	
cag tgc act gct gca atg aag aga aga ggc agc aga cac aaa taa agg	1423
Gln Cys Thr Ala Ala Met Lys Arg Arg Gly Ser Arg His Lys *	
405 410 415	
tggtcctttt gtttgatgaa gaaataaact tcagctgaag attttatata ggactttaaa	1483
aagaagagaa gagaaagaag aaacaatgca tttccaggca accacttaaa ggattttacat	1543
agacaatcct ataagatctt gaacttgaat tttatgggtt gtatttttaat aatgtaagta	1603
aattatttat gcactcctgg tgtgctatga atattattcc agttagcctt ggattatttc	1663
agtggccaac atatgcagac atttgtactc ctcaaccatt ttctcaaagt aatgggcatt	1723
ctatgattta gacttcaagg aattccaatg atgaagattt taaggaaagt attttatatt	1783
caacaggtat attctgctgc atgtactgta ctccagagct gttatgtaac actgtatata	1843
aatggttgca aaaaaaaaaa a	1864

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 <212> DNA  
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<220>  
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tcgtcagcgt ccgcgttttt cccggccccc cccaaccccc ccggacagga ccccttgag	180
cttgtccctc agctgccacc atg agc gac caa gat cac tcc atg gat gaa	230
Met Ser Asp Gln Asp His Ser Met Asp Glu	

atg aca gct gtg gtg aaa att gaa aaa gga gtt ggt ggc aat aat ggg	278
Met Thr Ala Val Val Lys Ile Glu Lys Gly Val Gly Gly Asn Asn Gly	
11 16 21 26	
ggc aat ggt aat ggt ggt ggt gcc ttt tca cag gct cga agt agc agc	326
Gly Asn Gly Asn Gly Gly Gly Ala Phe Ser Gln Ala Arg Ser Ser Ser	
27 32 37 42	
aca ggc agt agc agc agc act gga gga gga ggg cag gag tcc cag cca	374
Thr Gly Ser Ser Ser Ser Thr Gly Gly Gly Gly Gln Glu Ser Gln Pro	
43 48 53 58	
tcc cct ttg gct ctg ctg gca gca act tgc agc aga att gag tca ccc	422
Ser Pro Leu Ala Leu Leu Ala Ala Thr Cys Ser Arg Ile Glu Ser Pro	
59 64 69 74	
aat gag aac agc aac aac tcc cag ggc ccg agt cag tca ggg gga aca	470
Asn Glu Asn Ser Asn Asn Ser Gln Gly Pro Ser Gln Ser Gly Gly Thr	
75 80 85 90	
ggg gag ctt gac ctc aca gcc aca caa ctt tca cag ggt gcc aat ggc	518
Gly Glu Leu Asp Leu Thr Ala Thr Gln Leu Ser Gln Gly Ala Asn Gly	
91 96 101 106	
tgg cag atc atc tct tcc tcc tct ggg gct acc cct acc tca aag gaa	566
Trp Gln Ile Ile Ser Ser Ser Ser Gly Ala Thr Pro Thr Ser Lys Glu	
107 112 117 122	
cag agt ggc agc agt acc aat ggc agc aat ggc agt gag tct tcc aag	614
Gln Ser Gly Ser Ser Thr Asn Gly Ser Asn Gly Ser Glu Ser Ser Lys	
123 128 133 138	
aat cgc aca gtc tct ggt ggg cag tat gtt gtg gct gcc gct ccc aac	662
Asn Arg Thr Val Ser Gly Gly Gln Tyr Val Val Ala Ala Ala Pro Asn	
139 144 149 154	
tta cag aac cag caa gtt ctg aca gga cta cct gga gtg atg cct aat	710
Leu Gln Asn Gln Gln Val Leu Thr Gly Leu Pro Gly Val Met Pro Asn	
155 160 165 170	
att cag tat caa gta atc cca cag ttc cag acc gtt gat ggg caa cag	758
Ile Gln Tyr Gln Val Ile Pro Gln Phe Gln Thr Val Asp Gly Gln Gln	
171 176 181 186	
ctg cag ttt gct gcc act ggg gcc caa gtg cag cag gat ggt tct ggt	806
Leu Gln Phe Ala Ala Thr Gly Ala Gln Val Gln Gln Asp Gly Ser Gly	
187 192 197 202	
caa ata cag atc ata cca ggt gca aac caa cag att atc aca aat cga	854
Gln Ile Gln Ile Ile Pro Gly Ala Asn Gln Gln Ile Ile Thr Asn Arg	
203 208 213 218	
gga agt gga ggc aac atc att gct gct atg cca aac cta ctc cag cag	902
Gly Ser Gly Gly Asn Ile Ile Ala Ala Met Pro Asn Leu Leu Gln Gln	
219 224 229 234	

gct gtc ccc ctc caa ggc ctg gct aat aat gta ctc tca gga cag act	950
Ala Val Pro Leu Gln Gly Leu Ala Asn Asn Val Leu Ser Gly Gln Thr	
235 240 245 250	
cag tat gtg acc aat gta cca gtg gcc ctg aat ggg aac atc acc ttg	998
Gln Tyr Val Thr Asn Val Pro Val Ala Leu Asn Gly Asn Ile Thr Leu	
251 256 261 266	
cta cct gtc aac agc gtt tct gca gct acc ttg act ccc agc tct cag	1046
Leu Pro Val Asn Ser Val Ser Ala Ala Thr Leu Thr Pro Ser Ser Gln	
267 272 277 282	
gca gtc acg atc agc agc tct ggg tcc cag gag agt ggc tca cag cct	1094
Ala Val Thr Ile Ser Ser Ser Gly Ser Gln Glu Ser Gly Ser Gln Pro	
283 288 293 298	
gtc acc tca ggg act acc atc agt tct gcc agc ttg gta tca tca caa	1142
Val Thr Ser Gly Thr Thr Ile Ser Ser Ala Ser Leu Val Ser Ser Gln	
299 304 309 314	
gcc agt tcc agc tcc ttt ttc acc aat gcc aat agc tac tca act act	1190
Ala Ser Ser Ser Ser Phe Phe Thr Asn Ala Asn Ser Tyr Ser Thr Thr	
315 320 325 330	
act acc acc agc aac atg gga att atg aac ttt act acc agt gga tca	1238
Thr Thr Thr Ser Asn Met Gly Ile Met Asn Phe Thr Thr Ser Gly Ser	
331 336 341 346	
tca ggg acc aac tct caa ggc cag aca ccc cag agg gtc agt ggg cta	1286
Ser Gly Thr Asn Ser Gln Gly Gln Thr Pro Gln Arg Val Ser Gly Leu	
347 352 357 362	
cag ggg tct gat gct ctg aac atc cag caa aac cag aca tct gga ggc	1334
Gln Gly Ser Asp Ala Leu Asn Ile Gln Gln Asn Gln Thr Ser Gly Gly	
363 368 373 378	
tca ttg caa gca ggc cag cag aaa gaa gga gag caa aac cag cag aca	1382
Ser Leu Gln Ala Gly Gln Gln Lys Glu Gly Glu Gln Asn Gln Gln Thr	
379 384 389 394	
cag cag caa caa att ctt atc cag cct cag cta gtt caa ggg gga cag	1430
Gln Gln Gln Gln Ile Leu Ile Gln Pro Gln Leu Val Gln Gly Gly Gln	
395 400 405 410	
gcc ctc cag gcc ctc caa gca gca cca ttg tca ggg cag acc ttt aca	1478
Ala Leu Gln Ala Leu Gln Ala Ala Pro Leu Ser Gly Gln Thr Phe Thr	
411 416 421 426	
act caa gcc atc tcc cag gaa acc ctc cag aac ctc cag ctt cag gct	1526
Thr Gln Ala Ile Ser Gln Glu Thr Leu Gln Asn Leu Gln Leu Gln Ala	
427 432 437 442	
gtt cca aac tct ggt ccc atc atc atc cgg aca cca aca gtg ggg ccc	1574
Val Pro Asn Ser Gly Pro Ile Ile Ile Arg Thr Pro Thr Val Gly Pro	
443 448 453 458	



aat gga cag gtc agt tgg cag act cta cag ctg cag aac ctc caa gtt	1622
Asn Gly Gln Val Ser Trp Gln Thr Leu Gln Leu Gln Asn Leu Gln Val	
459 464 469 474	
cag aac cca caa gcc caa aca atc acc tta gcc cca atg cag ggt gtt	1670
Gln Asn Pro Gln Ala Gln Thr Ile Thr Leu Ala Pro Met Gln Gly Val	
475 480 485 490	
tcc ttg ggg cag acc agc agc agc aac acc act ctc aca ccc att gcc	1718
Ser Leu Gly Gln Thr Ser Ser Ser Asn Thr Thr Leu Thr Pro Ile Ala	
491 496 501 506	
tca gct gct tcc att cct gct ggc aca gtc act gtg aat gct gct caa	1766
Ser Ala Ala Ser Ile Pro Ala Gly Thr Val Thr Val Asn Ala Ala Gln	
507 512 517 522	
ctc tcc tcc atg cca ggc ctc cag acc att aac ctc agt gca ttg ggt	1814
Leu Ser Ser Met Pro Gly Leu Gln Thr Ile Asn Leu Ser Ala Leu Gly	
523 528 533 538	
act tca gga atc cag gtg cac cca att caa ggc ctg ccg ttg gct ata	1862
Thr Ser Gly Ile Gln Val His Pro Ile Gln Gly Leu Pro Leu Ala Ile	
539 544 549 554	
gca aat gcc cca ggt gat cat gga gct cag ctt ggt ctc cat ggg gct	1910
Ala Asn Ala Pro Gly Asp His Gly Ala Gln Leu Gly Leu His Gly Ala	
555 560 565 570	
ggg ggt gat gga ata cat gat gac aca gca ggt gga gag gaa gga gaa	1958
Gly Gly Asp Gly Ile His Asp Asp Thr Ala Gly Gly Glu Glu Gly Glu	
571 576 581 586	
aac agc cca gat gcc caa ccc caa gcc ggt cgg agg acc cgg cgg gaa	2006
Asn Ser Pro Asp Ala Gln Pro Gln Ala Gly Arg Arg Thr Arg Arg Glu	
587 592 597 602	
gca tgc acc tgc ccc tac tgt aaa gac agt gaa gga agg ggc tcg ggg	2054
Ala Cys Thr Cys Pro Tyr Cys Lys Asp Ser Glu Gly Arg Gly Ser Gly	
603 608 613 618	
gat cct ggc aaa aag aaa cag cat att tgc cac atc caa ggc tgt ggg	2102
Asp Pro Gly Lys Lys Lys Gln His Ile Cys His Ile Gln Gly Cys Gly	
619 624 629 634	
aaa gtg tat ggc aag acc tct cac ctg cgg gca cac ttg cgc tgg cat	2150
Lys Val Tyr Gly Lys Thr Ser His Leu Arg Ala His Leu Arg Trp His	
635 640 645 650	
aca ggc gag agg cca ttt atg tgt acc tgg tca tac tgt ggg aaa cgc	2198
Thr Gly Glu Arg Pro Phe Met Cys Thr Trp Ser Tyr Cys Gly Lys Arg	
651 656 661 666	
ttc aca cgt tcg gat gag cta cag agg cac aaa cgt aca cac aca ggt	2246
Phe Thr Arg Ser Asp Glu Leu Gln Arg His Lys Arg Thr His Thr Gly	
667 672 677 682	
gag aag aaa ttt gcc tgc cct gag tgt cct aag cgc ttc atg agg agt	2294



<213> Homo sapiens

<220>

<221> CDS

<222> (45)..(857)

<400> 437

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Met Ala Pro Trp  
1

ggc aag cgg ctg gct ggc gtg cgc ggg gtg ctg ctt gac atc tcg ggc 104  
Gly Lys Arg Leu Ala Gly Val Arg Gly Val Leu Leu Asp Ile Ser Gly  
5 10 15 20

gtg ctg tac gac agc ggc gcg ggc ggc ggc acg gcc atc gcc ggc tcg 152  
Val Leu Tyr Asp Ser Gly Ala Gly Gly Gly Thr Ala Ile Ala Gly Ser  
21 26 31 36

gtg gag gcg gtg gcc aga ctg aag cgt tcc cgg ctg aag gtg agg ttc 200  
Val Glu Ala Val Ala Arg Leu Lys Arg Ser Arg Leu Lys Val Arg Phe  
37 42 47 52

tgc acc aac gag tcg cag aag tcc cgg gca gag ctg gtg ggg cag ctt 248  
Cys Thr Asn Glu Ser Gln Lys Ser Arg Ala Glu Leu Val Gly Gln Leu  
53 58 63 68

cag agg ctg gga ttt gac atc tct gag cag gag gtg acc gcc ccg gca 296  
Gln Arg Leu Gly Phe Asp Ile Ser Glu Gln Glu Val Thr Ala Pro Ala  
69 74 79 84

cca gct gcc tgc cag atc ctg aag gag cga ggc ctg cga cca tac ctg 344  
Pro Ala Ala Cys Gln Ile Leu Lys Glu Arg Gly Leu Arg Pro Tyr Leu  
85 90 95 100

ctc atc cat gac gga gtc cgc tca gaa ttt gat cag atc gac aca tcc 392  
Leu Ile His Asp Gly Val Arg Ser Glu Phe Asp Gln Ile Asp Thr Ser  
101 106 111 116

aac cca aac tgt gtg gta att gca gac gca gga gaa agc ttt tct tat 440  
Asn Pro Asn Cys Val Val Ile Ala Asp Ala Gly Glu Ser Phe Ser Tyr  
117 122 127 132

caa aac atg aat aac gcc ttc cag gtg ctc atg gag ctg gaa aaa cct 488  
Gln Asn Met Asn Asn Ala Phe Gln Val Leu Met Glu Leu Glu Lys Pro  
133 138 143 148

gtg ctc ata tca ctg gga aaa ggg cgt tac tac aag gag acc tct ggc 536  
Val Leu Ile Ser Leu Gly Lys Gly Arg Tyr Tyr Lys Glu Thr Ser Gly  
149 154 159 164

ctg atg ctg gac gtt ggt ccc tac atg aag gcg ctt gag tat gcc tgt 584  
Leu Met Leu Asp Val Gly Pro Tyr Met Lys Ala Leu Glu Tyr Ala Cys  
165 170 175 180

ggc atc aaa gcc gag gtg ggg ggg aag cct tct cct gag ttt ttc aag 632  
Gly Ile Lys Ala Glu Val Gly Gly Lys Pro Ser Pro Glu Phe Phe Lys

181	186	191	196	
tct gcc ctg caa gcg ata gga gtg gaa gcc cac cag gcc gtc atg att				680
Ser Ala Leu Gln Ala Ile Gly Val Glu Ala His Gln Ala Val Met Ile				
197	202	207	212	
ggg gac gat atc gtg ggc gac gtc ggc ggt gcc cag cgg tgt gga atg				728
Gly Asp Asp Ile Val Gly Asp Val Gly Gly Ala Gln Arg Cys Gly Met				
213	218	223	228	
aga gcg ctg cag gtg cgc acc ggg aag ttc agg ccc agt gac gag cac				776
Arg Ala Leu Gln Val Arg Thr Gly Lys Phe Arg Pro Ser Asp Glu His				
229	234	239	244	
cat ccg gaa gtg aag gct gat ggg tac gtg gac aac ctc gca gag gca				824
His Pro Glu Val Lys Ala Asp Gly Tyr Val Asp Asn Leu Ala Glu Ala				
245	250	255	260	
gtg gac ctg ctg ctg cag cac gcc gac aag tga tggcctcc tgggagagcc				875
Val Asp Leu Leu Leu Gln His Ala Asp Lys *				
261	266	271		
ccgcctcctc caccctgcc tctcctccac cctgcctcc cctccacccc tgcctctcct				935
ccaccgccc aggagagccc cacctcctcc acccctgqct ctccctccacc cctgcctccc				995
ctccacctgc cccagtgtcc agaccaacca aggcctgac agccctgcct tctgcectct				1055
gccctgcatg ggcaggcatt tgttccctac ctgggtggcc tgctcccctg cctgggcccct				1115
gacttcagct cctgtagtg aagtccagga ggggtgggaca ggccctgtcag gcctctggga				1175
atctcccaaa tcccagaact caccactcac catggggcctt taaatgcagt aaactccacc				1235
taaccagatt caggggcact atgccactg cctcctcttc agactctttg catttcagt				1295
aagagcctgg aagaaaccca ggggcctcct atgcacagat cttgcagccc agaaccaagt				1355
cagcctccct gcgactgccc aggcacactg ccaccacccc ccccccgaa acaatgccag				1415
cccgtgctt tttctatcct cccagtcacc tttgcagaca aagaccaggg gcagctccc				1475
agggcactgt gaaggctccc atgccacaca gtgagaactg tagcctctgc gtccaaggca				1535
cacagggtag tttctggacc cactgctgga cagaattgaa ggtgtcatgc ccggtgtgtg				1595
caggaggaaa ctaacagttc agtaactct gccttgacca gcaaaaaaaaa aaaaa				1650

<210> 438

<211> 603

<212> DNA

<213> Homo sapiens

<220>

<221> CDS  
<222> (251)..(469)

<400> 438

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ccgggaggtg gaggttgtag tgagctgaga ttgtgccact gcactctagc ctggttgaca      120
gagtgaagact ccctctcaaa aaataaaaat aaaatataaa taaataaaac aattgggggcc      180
tcactattttt atatttttgt ctcaaaaaaac aactctctct tgtggtgtgt gcttgattct      240
gcttcttgtc  atg tct tct cac aag tct ttt aag agt aag cga ttc ctg      289
              Met Ser Ser His Lys Ser Phe Lys Ser Lys Arg Phe Leu
                1             5             10

gcc aag aaa caa aag cca aat cgt ccc att ctc cag tgg atc tgg ttg      337
Ala Lys Lys Gln Lys Pro Asn Arg Pro Ile Leu Gln Trp Ile Trp Leu
  14             19             24             29

aaa act ggt aat aaa atc agg cac aac tgg aaa gga gac att gca gaa      385
Lys Thr Gly Asn Lys Ile Arg His Asn Trp Lys Gly Asp Ile Ala Glu
  30             35             40             45

cag cca agc tgg gtc tat aag gaa ctg cac gtg agc tgg cac aca tat      433
Gln Pro Ser Trp Val Tyr Lys Glu Leu His Val Ser Trp His Thr Tyr
  46             51             56             61

tca cgc tgt atc aag gtc acg gcc atc tta cta tag caag ctgaaaacgt      483
Ser Arg Cys Ile Lys Val Thr Ala Ile Leu Leu *
  62             67             72

caccactgtc tgaacagttg gacgtgtttt attgggaata tattttttct ctttgcttat      543

atgccctgcg atagtaggct gggttcagta ataaatatgt gagacctttt gtttcaggaa      603

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<210> 439  
<211> 1816  
<212> DNA  
<213> Homo sapiens

<220>  
<221> CDS  
<222> (178)..(729)

<400> 439

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gcttgccggg tgaacctgca gggagcctgg ggagagcggc caggggtcag agcgtccgag      120
gcggaatccc cggggaaacg cgcagatgta agctggtgga gccgccagct ggagacg      177
atg gtg gac cac ttg gcc aac acg gag atc aac agc cag cgc atc gcg      225
Met Val Asp His Leu Ala Asn Thr Glu Ile Asn Ser Gln Arg Ile Ala
  1             5             10             15

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gca gtg gag agc tgc ttc ggg gcc tcg ggg cag ccg ctg gcg ctg cca	273
Ala Val Glu Ser Cys Phe Gly Ala Ser Gly Gln Pro Leu Ala Leu Pro	
17 22 27 32	
ggc cga gtg ctg ctg ggc gag ggc gtg ctg acc aaa gag tgc cgc aag	321
Gly Arg Val Leu Leu Gly Glu Gly Val Leu Thr Lys Glu Cys Arg Lys	
33 38 43 48	
aag gcc aag ccg cgc atc ttc ttc ctc ttt aac gac atc ctg gtg tat	369
Lys Ala Lys Pro Arg Ile Phe Phe Leu Phe Asn Asp Ile Leu Val Tyr	
49 54 59 64	
ggc agc atc gtg ctc aac aag cgc aag tac cgc agc cag cac atc atc	417
Gly Ser Ile Val Leu Asn Lys Arg Lys Tyr Arg Ser Gln His Ile Ile	
65 70 75 80	
ccc ctg gag gag gtc aca ctg gag ctg ttg ccg gag acg ctg cag gcc	465
Pro Leu Glu Glu Val Thr Leu Glu Leu Leu Pro Glu Thr Leu Gln Ala	
81 86 91 96	
aag aac cgc tgg atg atc aag acg gcc aag aag tcc ttt gtg gtg tcg	513
Lys Asn Arg Trp Met Ile Lys Thr Ala Lys Lys Ser Phe Val Val Ser	
97 102 107 112	
gcc gcc tcc gct acg gag cgc cag gaa tgg att agc cac atc gag gag	561
Ala Ala Ser Ala Thr Glu Arg Gln Glu Trp Ile Ser His Ile Glu Glu	
113 118 123 128	
tgc gtg cgg cgg caa ctg agg gcc acg ggc cgc ccg ccc agc acg gag	609
Cys Val Arg Arg Gln Leu Arg Ala Thr Gly Arg Pro Pro Ser Thr Glu	
129 134 139 144	
cac gcg gca ccc tgg atc ccc gac aag gcc acg gac atc tgc atg cgc	657
His Ala Ala Pro Trp Ile Pro Asp Lys Ala Thr Asp Ile Cys Met Arg	
145 150 155 160	
tgc acg cag acg cgc ttc tct gcc ctc acg agg cgc cac cac tgc cgc	705
Cys Thr Gln Thr Arg Phe Ser Ala Leu Thr Arg Arg His His Cys Arg	
161 166 171 176	
aag tgc gtt cgt ggt ctg cgc tga gtgctgcgc cagcgccttcc tgctccgcg	759
Lys Cys Val Arg Gly Leu Arg *	
177 182	
cctgtccccc aagcccgtag gcgtctgcag cctctgttac cgcgaactgg ccgcccagca	819
gcggcaggag gagggcgagg agcagggcgc ggggtcccca gggcagccag cccacctggc	879
ccggcccatc tgcggacgtc cagtggagat gacgatgact ccgacgagga caaggagggc	939
agcagggacg gcgactggcc cagcagcgtg gagttctacg cctcgggggt ggcctggtct	999
gccttcaca gctgaccccc ggctgcaga acatctgtcc ccaagccagc tccactgccc	1059
aggcccccaa gagggcagct ccagaagctg ccaggggtc cgggaccca tcccatggtg	1119

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gcagggtgcag cgggtggggag tggctctttc tggactccca gtgccttttt gctggacact 1179
gtgtccttat ggcttcactg caggtaatgc ctttccttc aggaagcccc agaacaccca 1239
cagggtcttgg taacaaacgc caccttacac tctgcaggct gcagcggcag ctccagatgg 1299
cctcctgagc tggacgaccc cagggtctcca gacatctagg gaccagagca ggtttgggaa 1359
cacagaggga agacaggatg ggagtgtagc cacagaaccc acctgcaccc tgacaggcac 1419
accccactga agagcctgag tcccaggagg cctcctggaa gcccaggact gcccacccac 1479
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ctccccgagg cccagggcag cggggtgagg actctgtcct gtgtcacctc tctccaggtg 1659
tccagctgtc tcatgccttt ttgtcctgtc ctcagctctc cgtgtggtca gcgaaaccat 1719
tgttttctgt taggactcag ttgcaagaac agaaaccctg cccccactta ataataaaaa 1779
agaaagttaa ttgatgggtg gttgcaaaaa aaaaaaa 1816

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<210> 440
<211> 833
<212> DNA
<213> Homo sapiens

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<220>
<221> CDS
<222> (258)..(467)

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<220>
<221> misc_feature
<222> (1)...(833)
<223> n = a,t,c or g

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<400> 440
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gcaccttgnn ccgcctgagt cgacgcccgc gtcctgcgt attgctcctt tnccacagtg 120
gactctgtgg tcgccacatc cttctcctgc atgtggcaag ccaccgggccc atgggctgct 180
gaccgctctc gctggccttc gtgggtgcct cccactagcc taccagcaga cctcggcctt 240
cgcccggcag ccccgcg atg agc tgg agc gcg tgc gtg tca gct gca cca 290
Met Ser Trp Ser Ala Cys Val Ser Ala Ala Pro
1 5
tca tct tcc tgg cca gca tct tcc agc tgg cca tgt gga cca cgg cgc 338
Ser Ser Ser Trp Pro Ala Ser Ser Ser Trp Pro Cys Gly Pro Arg Arg
12 17 22 27

```

tgc tgc acc agg cgg aga cgc tgc agc cct cgg tgt ggt ttg gcg gcc	386
Cys Cys Thr Arg Arg Arg Arg Cys Ser Pro Arg Cys Gly Leu Ala Ala	
28 33 38 43	
ggg agc atg tgc tca tgt tcg cca agc tgg cgc tgt acc cct gtg cca	434
Gly Ser Met Cys Ser Cys Ser Pro Ser Trp Arg Cys Thr Pro Val Pro	
44 49 54 59	
gcc tgc tgg cct tcg cct cca cct gcc tgc tga gcaggttc agtgtgggca	485
Ala Cys Trp Pro Ser Pro Pro Pro Ala Cys *	
60 65 70	
tottccacct catgcagatc gccgtgccct gcgccttcct gttgctgcgc ctgctcgtgg	545
gcctggccct ggccaccctg cgggtcctgc ggggcctcgc ccggcccgaa cccccccgc	605
cagcccccac gggccaggac gaccacagt ccagctcct ccctgcccc tgctagcagc	665
cacagagccc actccagcc gtcctcacca gagatggacc agggaggaca ggatgctggg	725
caggggaagc caagtcacgg gcaggccgca gtggttcttg cgtggcctgg ttttattttc	785
attgtgaaat atcatgctct tatttcagtc ctcaaaaaaa aaaaaaaa	833

<210> 441  
 <211> 1241  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> CDS  
 <222> (350)..(553)

<220>  
 <221> misc\_feature  
 <222> (1)...(1241)  
 <223> n = a,t,c or g

<400> 441	
atgactggaa agtgcagaaa gccccgaagc tgatgctggt agtggaaatct caggcactga	60
gtgtggcgag tctcaactgg ccaactccac ggagcctggg gaggcttcag caagagccaa	120
gtgagagcag gtcagaggcc gggcccagcg ccagcgaggc atctgggggag ccgtgccctt	180
gttagcgctg aaaatggaag cccctccatt caggcctgga cagatgatgg gcagcgaatg	240
tgctcacatg ctgagctgtg gggctggact aggtaccaa atcagggtag aacactgaga	300
cgtctgtggg cgggtgtgtg cacatccaca cttgtacact cacattcac atg cac	355
	Met His
	1



ata tgt gca cac gca tgc aat tca tac aca tgc aca gtt gtg ctc aca	403
Ile Cys Ala His Ala Cys Asn Ser Tyr Thr Cys Thr Val Val Leu Thr	
3 8 13 18	
gcc tcg cac gcc ctt gca cac tcg cac tta tac aca tgc atg gtc atg	451
Ala Ser His Ala Leu Ala His Ser His Leu Tyr Thr Cys Met Val Met	
19 24 29 34	
ctc aca gcc tcg cac acg ccc tcg cac act cat cca cac aca gct gtg	499
Leu Thr Ala Ser His Thr Pro Ser His Thr His Pro His Thr Ala Val	
35 40 45 50	
cac aag gaa cac aga gca gat gtt ctc aga ggg act ctg aca cct ttg	547
His Lys Glu His Arg Ala Asp Val Leu Arg Gly Thr Leu Thr Pro Leu	
51 56 61 66	
aga tga gggtttttta atcactggaa ggctctcttg ggtctaacag gttcagagaa	603
Arg *	
67	
tgtaacacct ggttttcaaa acatttttca aagaaataga gaattcccat acacagggcat	663
acgtgacgtt atgaggccgg tggaggcctc gtcggtgtt gccctgtatg gttgagctgt	723
ggtttaaggt gaactctgga gtgtgggctg cangtgaggg ctccgtccct gggagctggt	783
gggaggagct ggaggctggc gccgccctgc tcaaagctgc ctgcttgggc tcgtctgagg	843
cggttccgag ctgcaggtgt ctccaccaac ctgctgtgct acacagcggg gtccctgggca	903
gcctcaccac tgcgtgtctt gggttcctct tctgtaaaac agaggtgccc tccgaccctt	963
tggacaaaaca gggaagagcc gtaacacgca ggatgtgaat ggaaccttaa gcttgtgcct	1023
gaagggtcga gctactggtg gccgtgatgc ctgaccgacg cgaggctcgt cggaaggtag	1083
ggcacgatgg cagactgagc cctggtgtct atgaagcacc gagcaatgcg aggagggcag	1143
cagggaggaa cgcggcacgc gagtgggtgca gacacggaga gaacacaacg atcggacgtc	1203
gctgaggggat gtatgggacg gtgagacttc actcagt	1241

<210> 442  
 <211> 1990  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> CDS  
 <222> (636)..(1202)

<400> 442  
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cca gat gtg cat tgg atg ggt aca gga gcc tgc gat ctg cac aga tat	1133
Pro Asp Val His Trp Met Gly Thr Gly Ala Cys Asp Leu His Arg Tyr	
151 156 161 166	
ggt ccc ttg ctt cac ctc tca gga gca gct ctg ctc tgg ggg acc acc	1181
Gly Pro Leu Leu His Leu Ser Gly Ala Ala Leu Leu Trp Gly Thr Thr	
167 172 177 182	
tgg agc ctc cct atg aaa tag aa gcacgtgact tcctggctgg gcaatccgat	1234
Trp Ser Leu Pro Met Lys *	
183 188	
actcctgctg cccagatgcc tgcccttttc ccgagagagg ggtgcccgagg agaccaggta	1294
acaccaacca ggtccctgac agcccagctc caggagacca tgactttcaa ggatgtggag	1354
gtgaccttct cccaggacga gtgggggtgg ctggactctg ctcagaggaa cctgtacagg	1414
gatgtgatgc tggagaatta taggaacatg gcttccctgg tgggaccatt caccaaact	1474
gctctgatct cctggttggg agcaaggagg ccatggggcc tgaacatgca ggcagctcag	1534
cctaagggga atccagttgc tgctcctaca ggagatgacc tccagggtaa aacaaacaaa	1594
ttcatcttaa atcaggaacc tttggaagaa gcagaaacct tagctgtgtc atcaggatgt	1654
cctgcgacaa gtgtttctga ggggaattgat cgatcgatcc tcagagaatc ttttcaacag	1714
aatcagagca gggacaagat gagggacctc agggagggag agatggagcc cccaagtct	1774
gaactcatag gctggggagg aggagaaact tctaggtggg ttcgaggggg tgcgagccca	1834
cctccagccc tcagccctct tttccgcata acttggtcag ggcacaagga cttgaaggac	1894
ttgaaagtca ggggggtgag aggactggag gcgcctcgag tcaatgtctg ggaaacagag	1954
gctaaccagg cagcctccac ccctggaccc ccagcc	1990

<210> 443  
 <211> 2146  
 <212> DNA  
 <213> Homo sapiens

<220>  
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 <222> (690)..(1214)

<220>  
 <221> misc\_feature  
 <222> (1)...(2146)  
 <223> n = a,t,c or g

<400> 443

cggaattccc nnacgacgat ttcgtgtgcg agaaggggcg taactgattt ggaaaccaga	60
ggaaaggcgc tgttttcacc gaattagaat cgcgggaaaa tagagaagag tttgtttgaa	120
ggtctcgcga gatcgagtga gtacggctcg ccaagttgga gcgctctcgc gatagacaca	180
gcaactattc agctgcgagg ggacgggaga ggtggtgagc actctcgcga gatttgaagg	240
agcggcggag gccagagggg ggagaggacc ggaagtcctt catctcaagc atccaatgct	300
gaaagcggcc tgattttctc taccggaagc ccttttccag aggctgggaa cacggcccac	360
ctagcaggaa gtcccacctc cttgagctcc gccacccttc ccgaagtttt tctgtcacct	420
gtgttaggct ccgtcccctt tccgcgtttt atccccgtac cagaaaagga tacatttagt	480
gcctcccacc cagctccact aaacgggttg gatatctcat tctttgagtt ggtgttcctt	540
ccccggcgcc cccatgtagc tgggaagtgg gacctggggg tggttggaacc cctgggatcc	600
taaaggaggg gcagggaggg cgcagaactc cgcttctgct ccttgctacc aggacgcgcg	660
gcctcctcag cctctttcct cccgctgcc atg cac cct gca gcc ttc ccg ctt	713
Met His Pro Ala Ala Phe Pro Leu	
1 . 5	
cct gtg gtt gtg gcc gct gtg ctg tgg gga gcg gcc ccg acc cgg ggg	761
Pro Val Val Val Ala Ala Val Leu Trp Gly Ala Ala Pro Thr Arg Gly	
9 14 19 24	
ctc att cga gcg acc tcg gac cac aat gcc agc atg gac ttt gca gac	809
Leu Ile Arg Ala Thr Ser Asp His Asn Ala Ser Met Asp Phe Ala Asp	
25 30 35 40	
ctt cca gct ctg ttt ggg gct acc ttg agc cag gag ggc ctc cag ggg	857
Leu Pro Ala Leu Phe Gly Ala Thr Leu Ser Gln Glu Gly Leu Gln Gly	
41 46 51 56	
ttc ctt gtg gag gct cac cca gac aat gcc tgc agc ccc att gcc cca	905
Phe Leu Val Glu Ala His Pro Asp Asn Ala Cys Ser Pro Ile Ala Pro	
57 62 67 72	
cca ccc cca gcc ccg gtc aat ggg tca gtc ttt att gcg ctg ctt cga	953
Pro Pro Pro Ala Pro Val Asn Gly Ser Val Phe Ile Ala Leu Leu Arg	
73 78 83 88	
aga ttc gac tgc aac ttt gac ctc aag gtc cta aat gcc cag aag gct	1001
Arg Phe Asp Cys Asn Phe Asp Leu Lys Val Leu Asn Ala Gln Lys Ala	
89 94 99 104	
gga tat ggt gcc gct gta gta cac aat gtg aat tgc aat gaa ctt ctg	1049
Gly Tyr Gly Ala Ala Val Val His Asn Val Asn Cys Asn Glu Leu Leu	
105 110 115 120	
aac atg gtg tgg aat agt ggt aag gct ggg gga atc tat aca gct ggg	1097
Asn Met Val Trp Asn Ser Gly Lys Ala Gly Gly Ile Tyr Thr Ala Gly	
121 126 131 136	

ctt tca gta gga ccc aaa gat ggt ggg aag gct gaa ggc ctc agg aaa	1145
Leu Ser Val Gly Pro Lys Asp Gly Gly Lys Ala Glu Gly Leu Arg Lys	
137 142 147 152	
aga agc caa tcc ttt agg tgg ggt ggg gcc aaa gtg caa gat gcc agg	1193
Arg Ser Gln Ser Phe Arg Trp Gly Gly Ala Lys Val Gln Asp Ala Arg	
153 158 163 168	
gtt ccc aga gga ttt gag tag aa gggtgtgagt cccagagta acaccttgat	1246
Val Pro Arg Gly Phe Glu *	
169 174	
ccctgcagag gaaatccagc agcagatctg gatcccgctct gtattttattg gggagagaag	1306
ctccgagtag ctgcgtgccc tctttgtcta cgagaagggg gctcgggtgc ttctggttcc	1366
agacaatacc ttccccttgg gctattacct catccctttc acagggattg tgggactgct	1426
ggttttggcc atgggagcag taatgatagc tcgttgtatc cagcaccgga aacggctcca	1486
gcggaatcga cttaccaaag agcaactgaa acagattcct acacatgact atcagaaggg	1546
agaccagtat gatgtctgtg ccatttgcct ggatgaatat gaggatgggg acaagctgcg	1606
ggtactcccc tgtgctcatg cctaccacag ccgctgcgtg gacccctggc tctactcagac	1666
ccggaagacc tgccccattt gcaagcagcc tgttcatcgg ggtcctgggg acgaagacca	1726
agaggaagaa actcaagggc aagaggaggg tgatgaaggg gagccaaggg accaccctgc	1786
ctcagaaagg accccacttt tgggttctag cccactcct cccacctcct ttggttcctt	1846
agccccagct ccccttgttt ttcttgggcc ttcaacagat cccccactgt cccctccctc	1906
ttcccctggt atcctggtct aataaccccc cacacataca cctctggtga cctatttgca	1966
cagaccgtcg tcttccctcc agtcttctga gggatagggg acattccatc ccaagcttct	2026
cccttaccga cacctatcct tttgaggggc tttgggggtg ggctggggca agcagagggg	2086
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<210> 444  
 <211> 787  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> CDS  
 <222> (30) .. (659)

taagcttgcg gccgcaccca cttcagata atg aca aag caa ggg aag gag aca	53
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Met Thr Lys Gln Gly Lys Glu Thr  
1 5

aac aaa gag aag gaa caa ttt agg gga caa gaa gag aaa ggg gag aac	101
Asn Lys Glu Lys Glu Gln Phe Arg Gly Gln Glu Glu Lys Gly Glu Asn	
9 14 19 24	
aag gac agc acc ttg aca agg acc ccg ctc gag ccg ctg gag aaa aac	149
Lys Asp Ser Thr Leu Thr Arg Thr Pro Leu Glu Pro Leu Glu Lys Asn	
25 30 35 40	
aag caa atc cta gtg ctg ggc ctg gat gga gca gga aaa acc agt gtc	197
Lys Gln Ile Leu Val Leu Gly Leu Asp Gly Ala Gly Lys Thr Ser Val	
41 46 51 56	
ctg cac tct cta gct tca aac aga gtc cag cac agt gtg gca ccc acc	245
Leu His Ser Leu Ala Ser Asn Arg Val Gln His Ser Val Ala Pro Thr	
57 62 67 72	
caa ggt ttc cat gca gtt tgc atc aac act gaa gac agc cag atg gag	293
Gln Gly Phe His Ala Val Cys Ile Asn Thr Glu Asp Ser Gln Met Glu	
73 78 83 88	
ttc ctg gag att ggt ggc agt aaa cct ttt cgg tcc tac tgg gaa atg	341
Phe Leu Glu Ile Gly Gly Ser Lys Pro Phe Arg Ser Tyr Trp Glu Met	
89 94 99 104	
tac cta tcc aag gga ttg ctg ctg atc ttt gtg gtg gat tca gca gat	389
Tyr Leu Ser Lys Gly Leu Leu Leu Ile Phe Val Val Asp Ser Ala Asp	
105 110 115 120	
cac agc cga tta cct gaa gcc aag aaa tac ctt cat cag cta att gca	437
His Ser Arg Leu Pro Glu Ala Lys Lys Tyr Leu His Gln Leu Ile Ala	
121 126 131 136	
gca aac cca gta ctt cct ctg gtt gtg ttt gca aac aaa cag gat ctt	485
Ala Asn Pro Val Leu Pro Leu Val Val Phe Ala Asn Lys Gln Asp Leu	
137 142 147 152	
gaa gca gcc tat cac att aca gat atc cat gaa gct ttg gca tta tct	533
Glu Ala Ala Tyr His Ile Thr Asp Ile His Glu Ala Leu Ala Leu Ser	
153 158 163 168	
gaa gtg gga aat gac agg aag atg ttc ttg ttt gga acc tac ctg act	581
Glu Val Gly Asn Asp Arg Lys Met Phe Leu Phe Gly Thr Tyr Leu Thr	
169 174 179 184	
aag aat ggc tca gag ata ccc tcc acc atg caa gat gcc aaa gac ttg	629
Lys Asn Gly Ser Glu Ile Pro Ser Thr Met Gln Asp Ala Lys Asp Leu	
185 190 195 200	
att gca cag ctg gct gca gat gtg cag tga c caggactcag cccactgtgc	680
Ile Ala Gln Leu Ala Ala Asp Val Gln *	
201 206	
ggctcacgac tgagatgtca tcagtgttga atggcaggct tgaagccaaa gggtttccacc	740

tcaaataaaa attaagccat ttcctattaa aaaaaaaaaa aaaaaaa

787

<210> 445  
<211> 1635  
<212> DNA  
<213> Homo sapiens

<220>  
<221> CDS  
<222> (327)..(986)

<220>  
<221> misc\_feature  
<222> (1)...(1635)  
<223> n = a,t,c or g

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ccccccccca tagaatacat tgcataccnc gagagcagga antccctca caacacatgt 60  
catgacaaaa gacacacata caagctccaa aggcttttgt caggtaattc ttcctccagg 120  
accccatctg gccctccct catccctccc cttggacttt gcccttctta ctggccaggc 180  
agggggggcca gagtccaggc ttgactcatt cccaccttgt cctgggctga gatcccaggt 240  
ttgtaacaga aaacaccact aaagccccag cacaggagag aaccacccag cccagaagtt 300  
ccaggaagg aactctccgg tccacc atg gag tac ctc tca gct ctg aac ccc 353  
Met Glu Tyr Leu Ser Ala Leu Asn Pro  
1 5  
agt gac tta ctc agg tca gta tct aat ata agc tcg gag ttt gga cgg 401  
Ser Asp Leu Leu Arg Ser Val Ser Asn Ile Ser Ser Glu Phe Gly Arg  
10 15 20 25  
agg gtc tgg acc tca gct cca cca ccc cag cga cct ttc cgt gtc tgt 449  
Arg Val Trp Thr Ser Ala Pro Pro Pro Gln Arg Pro Phe Arg Val Cys  
26 31 36 41  
gat cac aag cgg acc atc cgg aaa ggc ctg aca gct gcc acc cgc cag 497  
Asp His Lys Arg Thr Ile Arg Lys Gly Leu Thr Ala Ala Thr Arg Gln  
42 47 52 57  
gag ctg cta gcc aaa gca ttg gag acc cta ctg ctg aat gga gtg cta 545  
Glu Leu Leu Ala Lys Ala Leu Glu Thr Leu Leu Leu Asn Gly Val Leu  
58 63 68 73  
acc ctg gtg cta gag gag gat gga act gca gtg gac agt gag gac ttc 593  
Thr Leu Val Leu Glu Glu Asp Gly Thr Ala Val Asp Ser Glu Asp Phe  
74 79 84 89  
ttc cag ctg ctg gag gat gac acg tgc ctg atg gtg ttg cag tct ggt 641  
Phe Gln Leu Leu Glu Asp Asp Thr Cys Leu Met Val Leu Gln Ser Gly  
90 95 100 105

cag agc tgg agc cct aca agg agt gga gtg ctg tca tat ggc ctg gga	689
Gln Ser Trp Ser Pro Thr Arg Ser Gly Val Leu Ser Tyr Gly Leu Gly	
106 111 116 121	
cgg gag agg ccc aag cac agc aag gac atc gcc cga ttc acc ttt gac	737
Arg Glu Arg Pro Lys His Ser Lys Asp Ile Ala Arg Phe Thr Phe Asp	
122 127 132 137	
gtg tac aag caa aac cct cga gac ctc ttt ggc agc ctg aat gtc aaa	785
Val Tyr Lys Gln Asn Pro Arg Asp Leu Phe Gly Ser Leu Asn Val Lys	
138 143 148 153	
gcc aca ttc tac ggg ctc tac tct atg agt tgt gac ttt caa gga ctt	833
Ala Thr Phe Tyr Gly Leu Tyr Ser Met Ser Cys Asp Phe Gln Gly Leu	
154 159 164 169	
ggc cca aag aaa gta ctc agg gag ctc ctt cgt tgg acc tcc aca ctg	881
Gly Pro Lys Lys Val Leu Arg Glu Leu Leu Arg Trp Thr Ser Thr Leu	
170 175 180 185	
ctg caa ggc ctg ggc cat atg ttg ctg gga att tcc tcc acc ctt cgt	929
Leu Gln Gly Leu Gly His Met Leu Leu Gly Ile Ser Ser Thr Leu Arg	
186 191 196 201	
cat gca gtg gag ggg gct gag cag tgg cag cag aag ggc cgc ctc cat	977
His Ala Val Glu Gly Ala Glu Gln Trp Gln Gln Lys Gly Arg Leu His	
202 207 212 217	
tcc tac taa ggggctc tgagcttctg cccccagaat cattccaacc gaccactgc	1033
Ser Tyr *	
218	
aaagactatg acagcatcaa atttcaggac ctgcagacag tacaggctag ataaccacc	1093
caatttcccc actgtcctct gatccccctcg tgacagaacc tttcagcata acgcctcaca	1153
tcccaagtct atacccttac ctgaagaatg ctgttctttc ctagccacct ttctagcctc	1213
ccacttgccc tgaaaggcca agatcaagat gtcccccagg catottgata ccagcctgac	1273
tgctgtctaca tctaatacccc taccaatgcc tctgttcctt aaactoccca gcatactgat	1333
gacagccctc tctgacttta ccttgagata tgtcttcata ccttccccct caaactaaca	1393
aaaacatttc caataaaaaat atcaaataatt taccacttaa gactttctgac tccaatttaa	1453
accaggaaag ggatgggggtg gataccccat tttgccctcc cccatcaaca cccagtccca	1513
gatccaaagc ctcagtcttc aagtatggag ttcaatgcnc gcctccgctt ggccaccgca	1573
ccctgctgct gttcccaagc ttctcgccgc tttaggaagg tagtcaaggc cacatttccg	1633
ac	1635



<210> 446  
 <211> 1471  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> CDS  
 <222> (904) .. (1293)

<400> 446

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ccctggcttg cggggagcaa gccaaaggcca agactttggc ctctccaata aaacctagtg	120
gctcttttgc gggccatagc ctcaaagaca aaagatattt tggctaggcg agcttggtcc	180
tcccgctcagc acaggaagca ttcacgtctg gtcatcactc tagcttcaga ctcaaaagtg	240
aacgattggc tggctgtgag ccgcaggacc ctgcggggag accaggggtgg tctctacact	300
gttgggtagc tagctggagg caaggcgctt gtataagaaa cagtccaagg accctgtcct	360
gggcaggcag aattccgcgg acaggctgtt gtttcgcata agcagcacgg gctgcggaga	420
cagaaacctc cctgagtagt acggtgtatt atatgagaac atccacttag catagcaacg	480
tctacggaca acccctgtag ctcttcttct ggattgtttt ctgtttcaaa ccatgttttc	540
ttatttcta cgagtttatg tgcttggaag cgagcgtggg cgtgaaaaac cgtaccgcg	600
taaattcatc tgggtcccca aagactgagc cggtggcct cgttatttat gtgagcggct	660
atgtaaata ggattcggag attgctctat tgattggaga gagctggagg aggcgggtctc	720
tcttccagag cgctagttgg gagcggagct tgctgtcat tggtcgccag agccaatgga	780
aaggggctgc cgcgcgcccg taaagagttt gtagaggcag ttccgggtgcg gtacgttgca	840
ttccggtacc ggacgccgag agcggtttgt ctccgtctct ggagttgtag gcgagaggtg	900
atc atg tcc ggt cgc ggg aaa cag ggc ggc aaa gtg cga gca aag gcc	948
Met Ser Gly Arg Gly Lys Gln Gly Gly Lys Val Arg Ala Lys Ala	
1 5 10	
aaa tcc cgc tcc tcc cgc gcg ggc ctg cag ttc ccg gtg ggc cga gtg	996
Lys Ser Arg Ser Ser Arg Ala Gly Leu Gln Phe Pro Val Gly Arg Val	
16 21 26 31	
cac aga ctg ctg cgc aaa ggg aac tac gcg gag cga gtg ggc gcc ggg	1044
His Arg Leu Leu Arg Lys Gly Asn Tyr Ala Glu Arg Val Gly Ala Gly	
32 37 42 47	
gcg ccg gtg tac ctg gcg gcg gtg ttg gag tac ctt acg gcg gag atc	1092
Ala Pro Val Tyr Leu Ala Ala Val Leu Glu Tyr Leu Thr Ala Glu Ile	
48 53 58 63	

ctg gag ctg gct ggc aac gcc gcg cgt gac aac aag aag acc agg ata	1140
Leu Glu Leu Ala Gly Asn Ala Ala Arg Asp Asn Lys Lys Thr Arg Ile	
64 69 74 79	
att ccc cgc cac ctg cag ctc gcc atc cgc aac gac gag gag tta aac	1188
Ile Pro Arg His Leu Gln Leu Ala Ile Arg Asn Asp Glu Glu Leu Asn	
80 85 90 95	
aag ctg ctg ggc aaa gtg acc atc gct cag ggc ggc gtc ctg ccc aac	1236
Lys Leu Leu Gly Lys Val Thr Ile Ala Gln Gly Gly Val Leu Pro Asn	
96 101 106 111	
atc cag gcc gtg ctg ctg ccc aag aag acg gag agt cag aag acg aag	1284
Ile Gln Ala Val Leu Leu Pro Lys Lys Thr Glu Ser Gln Lys Thr Lys	
112 117 122 127	
agc aaa tga ccctgac gccgccctca gggagctggc tccgccagca aaggcccttt	1340
Ser Lys *	
128	
tcattggtcgt cccgcaatgc ttttgaatgt gctggatgtc atggagggcc ggtgacatct	1400
agcggggagg tgggcggcga ggggtcccggc gggagccaat aaagttggtg aaaatcgta	1460
aaaaaaaaa a	1471

<210> 447  
 <211> 1662  
 <212> DNA  
 <213> Homo sapiens  
  
 <220>  
 <221> CDS  
 <222> (152)..(1438)

<400> 447	
ttttgattgt aagctggtac gcctgcaggt accggtccgg tattcccggtcgcacgattt	60
cgtcagggcg caggcgcgcg ggtcccgga gcccgtagaga cggcgctgc tgggcgcg	120
tagccgtctg aggtgccgga gctgcgggag g atg gag cgc ctg aag gtg gaa	172
Met Glu Pro Leu Lys Val Glu	
1 5	
aag ttc gca acc gcc aac agg gga aac ggg ctg cgc gcc gtg acc ccg	220
Lys Phe Ala Thr Ala Asn Arg Gly Asn Gly Leu Arg Ala Val Thr Pro	
8 13 18 23	
ctg cgc ccc gga gag cta ctc ttc cgc tgc gat ccc ttg gcg tac acg	268
Leu Arg Pro Gly Glu Leu Leu Phe Arg Ser Asp Pro Leu Ala Tyr Thr	
24 29 34 39	
gtg tgc aag ggg agt cgt gcc gtc gtc tgc gac cgc tgc ctt ctc ggg	316
Val Cys Lys Gly Ser Arg Gly Val Val Cys Asp Arg Cys Leu Leu Gly	

40	45	50	55	
aag gaa aag ctg atg cga tgc tct cag tgc cgc gtc gcc aaa tac tgt				364
Lys Glu Lys Leu Met Arg Cys Ser Gln Cys Arg Val Ala Lys Tyr Cys				
56	61	66	71	
agt gct aag tgt cag aaa aaa gct tgg cca gac cac aag cgg gaa tgc				412
Ser Ala Lys Cys Gln Lys Lys Ala Trp Pro Asp His Lys Arg Glu Cys				
72	77	82	87	
aaa tgc ctt aaa agc tgc aaa ccc aga tat cct cca gac tcc gtt cga				460
Lys Cys Leu Lys Ser Cys Lys Pro Arg Tyr Pro Pro Asp Ser Val Arg				
88	93	98	103	
ctt ctt ggc aga gtt gtc ttc aaa ctt atg gat gga gca cct tca gaa				508
Leu Leu Gly Arg Val Val Phe Lys Leu Met Asp Gly Ala Pro Ser Glu				
104	109	114	119	
tca gag aag ctt tac tca ttt tat gat ctg gag tca aat att aac aaa				556
Ser Glu Lys Leu Tyr Ser Phe Tyr Asp Leu Glu Ser Asn Ile Asn Lys				
120	125	130	135	
ctg act gaa gat aag aaa gag ggc ctc agg caa ctc gta atg aca ttt				604
Leu Thr Glu Asp Lys Lys Glu Gly Leu Arg Gln Leu Val Met Thr Phe				
136	141	146	151	
caa cat ttc atg aga gaa gaa ata cag gat gcc tct cag ctg cca cct				652
Gln His Phe Met Arg Glu Glu Ile Gln Asp Ala Ser Gln Leu Pro Pro				
152	157	162	167	
gcc ttt gac ctt ttt gaa gcc ttt gca aaa gtg atc tgc aac tct ttc				700
Ala Phe Asp Leu Phe Glu Ala Phe Ala Lys Val Ile Cys Asn Ser Phe				
168	173	178	183	
acc atc tgt aat gcg gag atg cag gaa gtt ggt gtt ggc cta tat ccc				748
Thr Ile Cys Asn Ala Glu Met Gln Glu Val Gly Val Gly Leu Tyr Pro				
184	189	194	199	
agt atc tct ttg ctc aat cac agc tgt gac ccc aac tgt tcg att gtg				796
Ser Ile Ser Leu Leu Asn His Ser Cys Asp Pro Asn Cys Ser Ile Val				
200	205	210	215	
ttc aat ggg ccc cac ctc tta ctg cga gca gtc cga gac atc gag gtg				844
Phe Asn Gly Pro His Leu Leu Leu Arg Ala Val Arg Asp Ile Glu Val				
216	221	226	231	
gga gag gag ctc acc atc tgc tac ctg gat atg ctg atg acc agt gag				892
Gly Glu Glu Leu Thr Ile Cys Tyr Leu Asp Met Leu Met Thr Ser Glu				
232	237	242	247	
gag cgc cgg aag cag ctg agg gac cag tac tgc ttt gaa tgt gac tgt				940
Glu Arg Arg Lys Gln Leu Arg Asp Gln Tyr Cys Phe Glu Cys Asp Cys				
248	253	258	263	
ttc cgt tgc caa acc cag gac aag gat gct gat atg cta act ggt gat				988
Phe Arg Cys Gln Thr Gln Asp Lys Asp Ala Asp Met Leu Thr Gly Asp				
264	269	274	279	

gag caa gta tgg aag gaa gtt caa gaa tcc ctg aaa aaa att gaa gaa	1036
Glu Gln Val Trp Lys Glu Val Gln Glu Ser Leu Lys Lys Ile Glu Glu	
280 285 290 295	
ctg aag gca cac tgg aag tgg gag cag gtt ctg gcc atg tgc cag gcg	1084
Leu Lys Ala His Trp Lys Trp Glu Gln Val Leu Ala Met Cys Gln Ala	
296 301 306 311	
atc ata agc agc aat tct gaa cgg ctt ccc gat atc aac atc tac cag	1132
Ile Ile Ser Ser Asn Ser Glu Arg Leu Pro Asp Ile Asn Ile Tyr Gln	
312 317 322 327	
ctg aag gtg ctc gac tgc gcc atg gat gcc tgc atc aac ctc ggc ctg	1180
Leu Lys Val Leu Asp Cys Ala Met Asp Ala Cys Ile Asn Leu Gly Leu	
328 333 338 343	
ttg gag gaa gcc ttg ttc tat ggt act cgg acc atg gag cca tac agg	1228
Leu Glu Glu Ala Leu Phe Tyr Gly Thr Arg Thr Met Glu Pro Tyr Arg	
344 349 354 359	
att ttt ttc cca gga agc cat ccc gtc aga ggg gtt caa gtg atg aaa	1276
Ile Phe Phe Pro Gly Ser His Pro Val Arg Gly Val Gln Val Met Lys	
360 365 370 375	
gtt ggc aaa ctg cag cta cat caa ggc atg ttt ccc caa gca atg aag	1324
Val Gly Lys Leu Gln Leu His Gln Gly Met Phe Pro Gln Ala Met Lys	
376 381 386 391	
aat ctg aga ctg gct ttt gat att atg aga gtg aca cat ggc aga gaa	1372
Asn Leu Arg Leu Ala Phe Asp Ile Met Arg Val Thr His Gly Arg Glu	
392 397 402 407	
cac agc ctg att gaa gat ttg att cta ctt tta gaa gaa tgc gac gcc	1420
His Ser Leu Ile Glu Asp Leu Ile Leu Leu Glu Glu Cys Asp Ala	
408 413 418 423	
aac atc aga gca tcc taa gggaac gcagtcagag ggaaatacgg cgtgtgtctt	1474
Asn Ile Arg Ala Ser *	
424 429	
tggtgaatgc cttattgagg tcacacactc tatgctttgt tagctgtgtg aacctctcct	1534
attggaaatt ctgttccgtg tttgtgtagg taaataaagg cagacatggt ttgcaaacca	1594
caagaatcat tagttgtaga gaagcacgat tataataaat tcaaaacatt tggttgaaaa	1654
aaaaaaaa	1662

<210> 448  
 <211> 2464  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> CDS  
 <222> (20) .. (2320)

<400> 448

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1 5	
agt tca gcc gcg gcg gca gca gca gca gac tca aga atg aac aat ccg	100
Ser Ser Ala Ala Ala Ala Ala Ala Asp Ser Arg Met Asn Asn Pro	
12 17 22 27	
tca gaa acc agt aaa cca tct atg gag agt gga gat ggc aac aca ggc	148
Ser Glu Thr Ser Lys Pro Ser Met Glu Ser Gly Asp Gly Asn Thr Gly	
28 33 38 43	
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Thr Gln Thr Asn Gly Leu Asp Phe Gln Lys Gln Pro Val Pro Val Gly	
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Gln Val Gln Leu Ala Gly Thr Ser Leu Gln Ala Ala Ala Gln Ser Leu	
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Asn Val Gln Ser Lys Ser Asn Glu Glu Ser Gly Asp Ser Gln Gln Pro	
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Ser Gln Pro Ser Gln Gln Pro Ser Val Gln Ala Ala Ile Pro Gln Thr	
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Phe Ala Asn Ala Gly Gly Ala Pro Asn Ile Val Thr Ala Pro Leu Phe				
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ctg aac cct cag aac ctc tct ctg ctc acc agc aac cct gtt agc ttg				2164
Leu Asn Pro Gln Asn Leu Ser Leu Leu Thr Ser Asn Pro Val Ser Leu				
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gtc tct gcc gcc gca gca tct gca ggg aac tct gca cct gta gcc agc				2212
Val Ser Ala Ala Ala Ala Ser Ala Gly Asn Ser Ala Pro Val Ala Ser				
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ctt cac gcc acc tcc acc tct gct gag tcc atc cag aac tct ctc ttc				2260
Leu His Ala Thr Ser Thr Ser Ala Glu Ser Ile Gln Asn Ser Leu Phe				
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Lys Ala Gln *				
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cctctcgggg ttttaacttt tctttctca cacctagatc aagtactttg tgggtgcagaa	240
cccgctctct tggccggtct ccttgagct cctgcctctc tccttgtagc ctaaaccga	300



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Phe Thr Thr Gly Glu Phe Gln Leu Thr Glu Ala Cys Pro Tyr Leu Gly		
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Thr His Ser Glu Glu Ser Arg Phe Gly Ile Leu His Leu His Leu Gln		
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Pro Leu Glu Met Lys Arg Val Gly Val Val Phe Thr Pro Ala Asp Tyr		
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Gly Lys Val Thr Ser Leu Ile Leu Ile Arg Asn Asn Leu Thr Val Ile		
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Gly Gly Arg Leu Pro Gly Ala Gly Gly Ser Leu Arg Phe Lys Val Pro		
86 91 96 101		
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Glu Ser Thr Leu Met Asp Cys Arg Arg Gln Leu Lys Asp Ser Lys Gln		
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Ile Leu Ser Ile Thr Lys Asn Phe Lys Val Glu Asn Ile Gly Pro Leu		
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Tyr Gly Phe Glu Val Leu Asp Cys His Gln Phe Ser Leu Asp Pro Asn		
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Thr Ser Arg Asp Ile Ser Ile Val Phe Thr Pro Asp Phe Thr Ser Ser		
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Arg Phe Thr Leu Asn Val Thr Leu Pro His His Leu Leu Pro Leu Cys		
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Ala Asp Val Val Pro Gly Pro Ser Trp Glu Glu Ser Phe Trp Arg Leu 214 219 224 229	
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Val Lys Asn Glu Val	Asp His Cys Glu Asn	Leu Lys Lys Val Asp Thr					
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Val His Gln Val Arg Ala Ala Ile His Thr Pro Arg Phe Ser Lys Asp				
108	113	118	123	
cac aag tgc agc ctc gtg ttc tat atc ttg agc ccc ttg aac ctg aac				493
His Lys Cys Ser Leu Val Phe Tyr Ile Leu Ser Pro Leu Asn Leu Asn				
124	129	134	139	
agc atc cca gac att gag caa ccc aac gtg gcc tct gcc acc aag aag				541
Ser Ile Pro Asp Ile Glu Gln Pro Asn Val Ala Ser Ala Thr Lys Lys				
140	145	150	155	
ttc tcc tac aag ctg gtg aag acg ggc agc gtg gtc ctc aca gcc agc				589
Phe Ser Tyr Lys Leu Val Lys Thr Gly Ser Val Val Leu Thr Ala Ser				
156	161	166	171	
act gat ctc cgc ggc tat gtg gtg ggg cag gca ctg cag ctg cat gcc				637
Thr Asp Leu Arg Gly Tyr Val Val Gly Gln Ala Leu Gln Leu His Ala				
172	177	182	187	
gac gtt gag aac cag tca ggc aag gac acc agc cct gtg gtg gcc agt				685
Asp Val Glu Asn Gln Ser Gly Lys Asp Thr Ser Pro Val Val Ala Ser				
188	193	198	203	
ctg ctg cag aaa gtg tcc tat aag gcc aag cgc tgg atc cac gac gta				733
Leu Leu Gln Lys Val Ser Tyr Lys Ala Lys Arg Trp Ile His Asp Val				
204	209	214	219	
cgg acc att gcg gag gtg gag ggt gcg ggc gtc aag gcc tgg cgg cgg				781
Arg Thr Ile Ala Glu Val Glu Gly Ala Gly Val Lys Ala Trp Arg Arg				
220	225	230	235	
gcg cag tgg cac gag cag atc ctg gtg cct gcc ttg ccc cag tcg gcc				829
Ala Gln Trp His Glu Gln Ile Leu Val Pro Ala Leu Pro Gln Ser Ala				
236	241	246	251	
ctg ccg ggc tgc agc ctc atc cac atc gac tac tac tta cag gtc tct				877
Leu Pro Gly Cys Ser Leu Ile His Ile Asp Tyr Tyr Leu Gln Val Ser				
252	257	262	267	
ctg aag gcg ccg gaa gct act gtg acc ctc ccg gtc ttc att ggc aat				925
Leu Lys Ala Pro Glu Ala Thr Val Thr Leu Pro Val Phe Ile Gly Asn				
268	273	278	283	
att gct gtg aac cat gcc cca gtg agc ccc cgg cca ggc ctg ggg ctg				973
Ile Ala Val Asn His Ala Pro Val Ser Pro Arg Pro Gly Leu Gly Leu				
284	289	294	299	

cct cct ggg gcc cca ccc ctg gtg gtg cct tcc gca cca ccc cag gag	1021
Pro Pro Gly Ala Pro Pro Leu Val Val Pro Ser Ala Pro Pro Gln Glu	
300 305 310 315	
gag gct gag gct gag gct gcg gct ggc ggc ccc cac ttc ttg gac ccc	1069
Glu Ala Glu Ala Glu Ala Ala Ala Gly Gly Pro His Phe Leu Asp Pro	
316 321 326 331	
gtc ttc ctc tcc acc aag agc cat tcg cag cgg cag ccc ctg ctg gcc	1117
Val Phe Leu Ser Thr Lys Ser His Ser Gln Arg Gln Pro Leu Leu Ala	
332 337 342 347	
acc ttg agt tct gtg cct ggt gcg ccg gag ccc tgc cct cag gat ggc	1165
Thr Leu Ser Ser Val Pro Gly Ala Pro Glu Pro Cys Pro Gln Asp Gly	
348 353 358 363	
agc cct gcc tca cac ccg ctg cac cct ccc ttg tgc att tca aca ggt	1213
Ser Pro Ala Ser His Pro Leu His Pro Pro Leu Cys Ile Ser Thr Gly	
364 369 374 379	
gcc act gtc ccc tac ttt gca gag ggc tcc ggg ggg cca gtg ccc act	1261
Ala Thr Val Pro Tyr Phe Ala Glu Gly Ser Gly Gly Pro Val Pro Thr	
380 385 390 395	
acc agc acc ttg att ctt cct cca gag tac agt tct tgg ggc tac ccc	1309
Thr Ser Thr Leu Ile Leu Pro Pro Glu Tyr Ser Ser Trp Gly Tyr Pro	
396 401 406 411	
tat gag gcc cca ccg tct tat gag cag agc tgc ggc ggc gtg gaa ccc	1357
Tyr Glu Ala Pro Pro Ser Tyr Glu Gln Ser Cys Gly Gly Val Glu Pro	
412 417 422 427	
agc ctg acc cct gag agc tga cc ccgtgctgcc ttctccaggc aggcctggcc	1410
Ser Leu Thr Pro Glu Ser *	
428 433	
tctgccctgg gactggggcg cccagggcct cgtgccttct ctcttggcct agcctggccc	1470
actcaggacc tgcccagcct ctgccagctc ctctggcatc cgccctcttc tccctggggc	1530
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tatttgtaaa aaaaaaaaaa	1609

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Met Arg Lys Lys	
1	
tgg aaa atg gga ggc atg aaa tac ata ttt tcg ttg ttg ttc ttt ctt	164
Trp Lys Met Gly Gly Met Lys Tyr Ile Phe Ser Leu Leu Phe Phe Leu	
5 10 15 20	
ttg cta gaa gga ggc aaa aca gag caa gta aaa cat tca gag aca tat	212
Leu Leu Glu Gly Gly Lys Thr Glu Gln Val Lys His Ser Glu Thr Tyr	
21 26 31 36	
tgc atg ttt caa gac aag aag tac aga gtg ggt gag aga tgg cat cct	260
Cys Met Phe Gln Asp Lys Lys Tyr Arg Val Gly Glu Arg Trp His Pro	
37 42 47 52	
tac ctg gaa cct tat ggg ttg gtt tac tgc gtg aac tgc atc tgc tca	308
Tyr Leu Glu Pro Tyr Gly Leu Val Tyr Cys Val Asn Cys Ile Cys Ser	
53 58 63 68	
cag aat ggg aat gtg ctt tgc agc cga gtc aga tgt cca aat gtt cat	356
Gln Asn Gly Asn Val Leu Cys Ser Arg Val Arg Cys Pro Asn Val His	
69 74 79 84	
tgc ctt tct cct gtg cat att cct cat ctg tgc tgc cct cgc tgc cca	404
Cys Leu Ser Pro Val His Ile Pro His Leu Cys Cys Pro Arg Cys Pro	
85 90 95 100	
gaa gac tcc tta ccc cca gtg aac aat aag gtg acc agc aag tct tgc	452
Glu Asp Ser Leu Pro Pro Val Asn Asn Lys Val Thr Ser Lys Ser Cys	
101 106 111 116	
gag tac aat ggg aca act tac caa cat gga gag ctg ttc gta gct gaa	500
Glu Tyr Asn Gly Thr Tyr Gln His Gly Glu Leu Phe Val Ala Glu	
117 122 127 132	
ggg ctc ttt cag aat cgg caa ccc aat caa tgc acc cag tgc agc tgt	548
Gly Leu Phe Gln Asn Arg Gln Pro Asn Gln Cys Thr Gln Cys Ser Cys	
133 138 143 148	
tcg gag gga aac gtg tat tgt ggt ctc aag act tgc ccc aaa tta acc	596
Ser Glu Gly Asn Val Tyr Cys Gly Leu Lys Thr Cys Pro Lys Leu Thr	
149 154 159 164	
tgt gcc ttc cca gtc tct gtt cca gat tcc tgc tgc cgg gta tgc aga	644
Cys Ala Phe Pro Val Ser Val Pro Asp Ser Cys Cys Arg Val Cys Arg	
165 170 175 180	
gga gat gga gaa ctg tca tgg gaa cat tct gat ggt gat atc ttc cgg	692
Gly Asp Gly Glu Leu Ser Trp Glu His Ser Asp Gly Asp Ile Phe Arg	
181 186 191 196	
caa cct gcc aac aga gaa gca aga cat tct tac cac cgc tct cac tat	740
Gln Pro Ala Asn Arg Glu Ala Arg His Ser Tyr His Arg Ser His Tyr	



197	202	207	212	
gat cct cca cca agc cga cag gct gga ggt ctg tcc cgc ttt cct ggg				788
Asp Pro Pro Pro Ser Arg Gln Ala Gly Gly Leu Ser Arg Phe Pro Gly				
213	218	223	228	
gcc aga agt cac cgg gga gct ctt atg gat tcc cag caa gca tca gga				836
Ala Arg Ser His Arg Gly Ala Leu Met Asp Ser Gln Gln Ala Ser Gly				
229	234	239	244	
acc att gtg caa att gtc atc aat aac aaa cac aag cat gga caa gtg				884
Thr Ile Val Gln Ile Val Ile Asn Asn Lys His Lys His Gly Gln Val				
245	250	255	260	
tgt gtt tcc aat gga aag acc tat tct cat ggc gag tcc tgg cac cca				932
Cys Val Ser Asn Gly Lys Thr Tyr Ser His Gly Glu Ser Trp His Pro				
261	266	271	276	
aac ctc cgg gca ttt ggc att gtg gag tgt gtg cta tgt act tgt aat				980
Asn Leu Arg Ala Phe Gly Ile Val Glu Cys Val Leu Cys Thr Cys Asn				
277	282	287	292	
gtc acc aag caa gag tgt aag aaa atc cac tgc ccc aat cga tac ccc				1028
Val Thr Lys Gln Glu Cys Lys Lys Ile His Cys Pro Asn Arg Tyr Pro				
293	298	303	308	
tgc aag tat cct caa aaa ata gac gga aaa tgc tgc aag gtg tgt cca				1076
Cys Lys Tyr Pro Gln Lys Ile Asp Gly Lys Cys Cys Lys Val Cys Pro				
309	314	319	324	
ggg aaa aaa aca aaa gaa gaa ctt cca ggc caa agc ttt gac aat aaa				1124
Gly Lys Lys Thr Lys Glu Glu Leu Pro Gly Gln Ser Phe Asp Asn Lys				
325	330	335	340	
ggc tac ttc tgc ggg gaa gaa acg atg cct gtg tat gag tct gta ttc				1172
Gly Tyr Phe Cys Gly Glu Glu Thr Met Pro Val Tyr Glu Ser Val Phe				
341	346	351	356	
atg gag gat ggg gag aca acc aga aaa ata gca ctg gag act gag aga				1220
Met Glu Asp Gly Glu Thr Thr Arg Lys Ile Ala Leu Glu Thr Glu Arg				
357	362	367	372	
cca cct cag gta gag gtc cac gtt tgg act att cga aag ggc att ctc				1268
Pro Pro Gln Val Glu Val His Val Trp Thr Ile Arg Lys Gly Ile Leu				
373	378	383	388	
cag cac ttc cat att gag aag atc tcc aag agg atg ttt gag gag ctt				1316
Gln His Phe His Ile Glu Lys Ile Ser Lys Arg Met Phe Glu Glu Leu				
389	394	399	404	
cct cac ttc aag ctg gtg acc aga aca acc ctg agc cag tgg aag atc				1364
Pro His Phe Lys Leu Val Thr Arg Thr Thr Leu Ser Gln Trp Lys Ile				
405	410	415	420	
ttc acc gaa gga gaa gct cag atc agc cag atg tgt tca agt cgt gta				1412
Phe Thr Glu Gly Glu Ala Gln Ile Ser Gln Met Cys Ser Ser Arg Val				
421	426	431	436	







Gln	Leu	Ala	Arg	Trp	Arg	Leu	Phe	Gln	Cys	Leu	Thr	Gly	His	Phe	Trp	
213					218					223					228	
tcc	aag	gtc	tgt	gac	gtg	ctc	cag	ttc	cac	ttt	gcg	ttt	ttg	ttt	ctg	1135
Ser	Lys	Val	Cys	Asp	Val	Leu	Gln	Phe	His	Phe	Ala	Phe	Leu	Phe	Leu	
229					234					239					244	
acg	cat	ttc	aac	act	cac	cca	aga	ttc	cat	ccc	tct	ggc	ggg	aag	acg	1183
Thr	His	Phe	Asn	Thr	His	Pro	Arg	Phe	His	Pro	Ser	Gly	Gly	Lys	Thr	
245					250					255					260	
cgt	tga	acccagggaa	gaacctgctg	aaaaccgatg	acccccagca	ttgaaatgga										1239
Arg	*															
261																
ctctgagatg	gcagcgtggt	gccagtgtca	gacatcctgt	gtgtgatgat	atgcactgat											1299
cacacaagac	tgccctttcc	tgagaagctg	cgggcttcgg	tgtggagggg	tggagtgtctg											1359
tgatctcgac	aacttacttt	caaagacata	aagcacagat	ctccgcacag	gggatgtgtg											1419
tgttcctgat	gtaatttgca	taacttttct	gtagtgtgaa	atgtttccaa	ataaatattg											1479
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<220>  
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ggagtccttc	ccaaagtgtg	ctaggtcctt	ccgcgccggt	gcctggtctt	cgtcgtcaac											180
acc	atg	gac	agc	tcc	cgg	gaa	ccg	act	ctg	ggg	cgc	ttg	gac	gcc	gct	228
	Met	Asp	Ser	Ser	Arg	Glu	Pro	Thr	Leu	Gly	Arg	Leu	Asp	Ala	Ala	
	1						5								10	
ggc	ttc	tgg	cag	gtc	tgg	cag	cgc	ttt	gat	gcg	gat	gaa	aaa	ggt	tac	276
Gly	Phe	Trp	Gln	Val	Trp	Gln	Arg	Phe	Asp	Ala	Asp	Glu	Lys	Gly	Tyr	
	16					21				26					31	
ata	gaa	gag	aag	gaa	ctc	gat	gct	ttc	ttt	ctc	cac	atg	ttg	atg	aaa	324
Ile	Glu	Glu	Lys	Glu	Leu	Asp	Ala	Phe	Phe	Leu	His	Met	Leu	Met	Lys	
	32					37				42					47	

ctg ggt act gat gac acg gtc atg aaa gca aat ttg cac aag gtg aaa	372
Leu Gly Thr Asp Asp Thr Val Met Lys Ala Asn Leu His Lys Val Lys	
48 53 58 63	
cag cag ttt atg act acc caa gat gcc tct aaa gat ggt cgc att cgg	420
Gln Gln Phe Met Thr Thr Gln Asp Ala Ser Lys Asp Gly Arg Ile Arg	
64 69 74 79	
atg aaa gag ctt gct ggt atg ttc tta tct gag gat gaa aac ttt ctt	468
Met Lys Glu Leu Ala Gly Met Phe Leu Ser Glu Asp Glu Asn Phe Leu	
80 85 90 95	
ctg ctc ttt cgc cgg gaa aac cca ctg gac agc agc gtg gag ttt atg	516
Leu Leu Phe Arg Arg Glu Asn Pro Leu Asp Ser Ser Val Glu Phe Met	
96 101 106 111	
cag att tgg cgc aaa tat gac gct gac agc agt ggc ttt ata tca gct	564
Gln Ile Trp Arg Lys Tyr Asp Ala Asp Ser Ser Gly Phe Ile Ser Ala	
112 117 122 127	
gct gag ctc cgc aac ttc ctc cga gac ctc ttt ctt cac cac aaa aag	612
Ala Glu Leu Arg Asn Phe Leu Arg Asp Leu Phe Leu His His Lys Lys	
128 133 138 143	
gcc att tct gag gct aaa ctg gaa gaa tac act ggc acc atg atg aag	660
Ala Ile Ser Glu Ala Lys Leu Glu Glu Tyr Thr Gly Thr Met Met Lys	
144 149 154 159	
att ttt gac aga aat aaa gat ggt cgg ttg gat cta aat gac tta gca	708
Ile Phe Asp Arg Asn Lys Asp Gly Arg Leu Asp Leu Asn Asp Leu Ala	
160 165 170 175	
agg att ctg gct ctt cag gaa aac ttc ctt ctc caa ttt aaa atg gat	756
Arg Ile Leu Ala Leu Gln Glu Asn Phe Leu Leu Gln Phe Lys Met Asp	
176 181 186 191	
gct tgt tct act gaa gaa agg aaa agg gac ttt gag aaa atc ttt gcc	804
Ala Cys Ser Thr Glu Glu Arg Lys Arg Asp Phe Glu Lys Ile Phe Ala	
192 197 202 207	
tac tat gat gtt agt aaa aca gga gcc ctg gaa ggc cca gaa gtg gat	852
Tyr Tyr Asp Val Ser Lys Thr Gly Ala Leu Glu Gly Pro Glu Val Asp	
208 213 218 223	
ggg ttt gtc aaa gac atg atg gag ctt gtc cag ccc agc atc agc ggg	900
Gly Phe Val Lys Asp Met Met Glu Leu Val Gln Pro Ser Ile Ser Gly	
224 229 234 239	
gtg gac ctt gat aag ttc cgc gag att ctc ctg cgt cac tgc gac gtg	948
Val Asp Leu Asp Lys Phe Arg Glu Ile Leu Leu Arg His Cys Asp Val	
240 245 250 255	
aac aag gat gga aaa att cag aag tct gag ctg gct ttg tgt ctt ggg	996
Asn Lys Asp Gly Lys Ile Gln Lys Ser Glu Leu Ala Leu Cys Leu Gly	
256 261 266 271	

ctg aaa atc aac cca taa tcccag actgctttgc cttttgctct tactatgttt 1050  
 Leu Lys Ile Asn Pro \*  
 272 277

ctgtgatctt gctggtagaa ttgtatctgt gcattgatgt tgggaacaca gtgggcaaac 1110  
 tcacaaatgg tgtgctattc ttgggcaaga agagggacgc tagggccttc cttccaccgg 1170  
 cgtgatctat ccctgtctca ctgaaagccc ctgtgtagtg tctgtgttgt tttcccttga 1230  
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 Met Ser Arg Arg Gln Leu  
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gag aga tgg gtc tgg agc tca cag caa gtc cag gct aga ggt aga aac 162  
 Glu Arg Trp Val Trp Ser Ser Gln Gln Val Gln Ala Arg Gly Arg Asn  
 7 12 17 22

gtg aga gcc cca cgg ctg ggg aag att gcc atg gga ttg gag atg agc 210  
 Val Arg Ala Pro Arg Leu Gly Lys Ile Ala Met Gly Leu Glu Met Ser  
 23 28 33 38

tcc aag gac agc cct ggc agt ctg gat gga aga gct tgg gaa gat gct 258  
 Ser Lys Asp Ser Pro Gly Ser Leu Asp Gly Arg Ala Trp Glu Asp Ala  
 39 44 49 54

cag aaa cca caa agt gcc tgg tgc ggt ggg agg aaa acc aga gtg tat 306  
 Gln Lys Pro Gln Ser Ala Trp Cys Gly Gly Arg Lys Thr Arg Val Tyr  
 55 60 65 70

gct aca agc agc cgg cgg gcg ccg ccg agt gag ggg acg cgg cgc ggt 354  
 Ala Thr Ser Ser Arg Arg Ala Pro Pro Ser Glu Gly Thr Arg Arg Gly  
 71 76 81 86

ggg gcg gcg cgg ccc gag gag gcg gcg gag gag ggg ccg ccc gcg gcc	402
Gly Ala Ala Arg Pro Glu Glu Ala Ala Glu Glu Gly Pro Pro Ala Ala	
87 92 97 102	
ccc ggc tca ctc cgg cac tcc ggg ccg ctc ggc ccc cat gcc tgc ccg	450
Pro Gly Ser Leu Arg His Ser Gly Pro Leu Gly Pro His Ala Cys Pro	
103 108 113 118	
acc gcg ctg ccg gag ccc cag gtg acc agc gcc atg tcc agc cag gtg	498
Thr Ala Leu Pro Glu Pro Gln Val Thr Ser Ala Met Ser Ser Gln Val	
119 124 129 134	
gtg ggc att gag cct ctc tac atc aag gca gag ccg gcc agc cct gac	546
Val Gly Ile Glu Pro Leu Tyr Ile Lys Ala Glu Pro Ala Ser Pro Asp	
135 140 145 150	
agt cca aag ggt tcc tcg gag aca gag acc gag cct cct gtg gcc ctg	594
Ser Pro Lys Gly Ser Ser Glu Thr Glu Thr Glu Pro Pro Val Ala Leu	
151 156 161 166	
gcc cct ggt cca gct ccc act cgc tgc ctc cca ggc cac aag gaa gag	642
Ala Pro Gly Pro Ala Pro Thr Arg Cys Leu Pro Gly His Lys Glu Glu	
167 172 177 182	
gag gat ggg gag ggg gct ggg cct ggc gag cag ggc ggt ggg aag ctg	690
Glu Asp Gly Glu Gly Ala Gly Pro Gly Glu Gln Gly Gly Gly Lys Leu	
183 188 193 198	
gtg ctc agc tcc ctg ccc aag cgc ctc tgc ctg gtc tgt ggg gac gtg	738
Val Leu Ser Ser Leu Pro Lys Arg Leu Cys Leu Val Cys Gly Asp Val	
199 204 209 214	
gcc tcc ggc tac cac tat ggt gtg gca tcc tgt gag gcc tgc aaa gcc	786
Ala Ser Gly Tyr His Tyr Gly Val Ala Ser Cys Glu Ala Cys Lys Ala	
215 220 225 230	
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Phe Phe Lys Arg Thr Ile Gln Gly Ser Ile Glu Tyr Ser Cys Pro Ala	
231 236 241 246	
tcc aac gag tgt gag atc acc aag cgg aga cgc aag gcc tgc cag gcc	882
Ser Asn Glu Cys Glu Ile Thr Lys Arg Arg Arg Lys Ala Cys Gln Ala	
247 252 257 262	
tgc cgc ttc acc aag tgc ctg cgg gtg ggc atg ctc aag gag gga gtg	930
Cys Arg Phe Thr Lys Cys Leu Arg Val Gly Met Leu Lys Glu Gly Val	
263 268 273 278	
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Arg Leu Asp Arg Val Arg Gly Gly Arg Gln Lys Tyr Lys Arg Arg Pro	
279 284 289 294	
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Glu Val Asp Pro Leu Pro Phe Pro Gly Pro Phe Pro Ala Gly Pro Leu	
295 300 305 310	
gca gtc gct gga ggc ccc cgg aag aca gca gcc cca gtg aat gca ctg	1074



Ala Val Ala Gly Gly Pro Arg Lys Thr Ala Ala Pro Val Asn Ala Leu	
311 316 321 326	
gtg tct cat ctg ctg gtg gtt gag cct gag aag ctc tat gcc atg cct	1122
Val Ser His Leu Leu Val Val Glu Pro Glu Lys Leu Tyr Ala Met Pro	
327 332 337 342	
gac ccc gca ggc cct gat ggg cac ctc cca gcc gtg gct acc ctc tgt	1170
Asp Pro Ala Gly Pro Asp Gly His Leu Pro Ala Val Ala Thr Leu Cys	
343 348 353 358	
gac ctc ttt gac cga gag att gtg gtc acc atc agc tgg gcc aag agc	1218
Asp Leu Phe Asp Arg Glu Ile Val Val Thr Ile Ser Trp Ala Lys Ser	
359 364 369 374	
atc cca ggc ttc tca tcg ctg tcg ctg tct gac cag atg tca gta ctg	1266
Ile Pro Gly Phe Ser Ser Leu Ser Leu Ser Asp Gln Met Ser Val Leu	
375 380 385 390	
cag agc gtg tgg atg gag gtg ctg gtg ctg ggt gtg gcc cag cgc tca	1314
Gln Ser Val Trp Met Glu Val Leu Val Leu Gly Val Ala Gln Arg Ser	
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Leu Pro Leu Gln Asp Glu Leu Ala Phe Ala Glu Asp Leu Val Leu Asp	
407 412 417 422	
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Glu Glu Gly Ala Arg Ala Ala Gly Leu Gly Glu Leu Gly Ala Ala Leu	
423 428 433 438	
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Leu Gln Leu Val Arg Arg Leu Gln Ala Leu Arg Leu Glu Arg Glu Glu	
439 444 449 454	
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Tyr Val Leu Leu Lys Ala Leu Ala Leu Ala Asn Ser Asp Ser Val His	
455 460 465 470	
atc gaa gat gcc gag gct gtg gag cag ctg cga gaa gct ctg cac gag	1554
Ile Glu Asp Ala Glu Ala Val Glu Gln Leu Arg Glu Ala Leu His Glu	
471 476 481 486	
gcc ctg ctg gag tat gaa gcc ggc cgg gct ggc ccc gga ggg ggt gct	1602
Ala Leu Leu Glu Tyr Glu Ala Gly Arg Ala Gly Pro Gly Gly Gly Ala	
487 492 497 502	
gag cgg cgg cgg gcg ggc agg ctg ctg ctc acg cta ccg ctc ctc cgc	1650
Glu Arg Arg Arg Ala Gly Arg Leu Leu Leu Thr Leu Pro Leu Leu Arg	
503 508 513 518	
cag aca gcg ggc aaa gtg ctg gcc cat ttc tat ggg gtg aag ctg gag	1698
Gln Thr Ala Gly Lys Val Leu Ala His Phe Tyr Gly Val Lys Leu Glu	
519 524 529 534	
ggc aag gtg ccc atg cac aag ctg ttc ttg gag atg ctc gag gcc atg	1746
Gly Lys Val Pro Met His Lys Leu Phe Leu Glu Met Leu Glu Ala Met	

535	540	545	550	
atg gac tga ggcaagg ggtgggactg gtgggggttc tggcaggacc tgcctagcat				1802
Met Asp *				
551				
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agggccaggg caatgccatc agcccttggg aacaggcccc acgccctctc ctccccctcc				1922
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ccctgcagag caataacact atatttattt ttgggtttgg ccaggggaggc gcaggggacat				2402
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agctcaaaaa aaaaaaa				2539

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 <212> DNA  
 <213> Homo sapiens

<220>  
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 <222> (196)..(1158)

<400> 455

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ccctcgcccc cctgagttag tccggtctcc cggcgaaagt gagcgagggt tgcccggagc	180
gcgcacgagg ggaaa atg cct aaa aaa aag act ggt gcg agg aag aag gct	231
Met Pro Lys Lys Lys Thr Gly Ala Arg Lys Lys Ala	
1 5 10	
gag aac cgc cga gaa cgt gaa aaa caa cta aga gca tca aga agc act	279
Glu Asn Arg Arg Glu Arg Glu Lys Gln Leu Arg Ala Ser Arg Ser Thr	

13	18	23	28	
ata gat tta gct aaa cat cca tgt aat gcc tca atg gaa tgt gac aag				327
Ile Asp Leu Ala Lys His Pro Cys Asn Ala Ser Met Glu Cys Asp Lys				
29	34	39	44	
tgt cag agg cgg cag aag aat aga gca ttt tgc tac ttt tgt aat tct				375
Cys Gln Arg Arg Gln Lys Asn Arg Ala Phe Cys Tyr Phe Cys Asn Ser				
45	50	55	60	
gta cag aag tta cca att tgt gca cag tgt ggg aaa aca aag tgc atg				423
Val Gln Lys Leu Pro Ile Cys Ala Gln Cys Gly Lys Thr Lys Cys Met				
61	66	71	76	
atg aag tct tca gac tgt gtc ata aag cat gct ggt gta tac agt act				471
Met Lys Ser Ser Asp Cys Val Ile Lys His Ala Gly Val Tyr Ser Thr				
77	82	87	92	
ggc ctt gca atg gtg ggt gca ata tgt gac ttc tgt gaa gct tgg gtt				519
Gly Leu Ala Met Val Gly Ala Ile Cys Asp Phe Cys Glu Ala Trp Val				
93	98	103	108	
tgc cat ggg agg aag tgt ctc agt aca cat gcc tgt gcc tgc cct ctc				567
Cys His Gly Arg Lys Cys Leu Ser Thr His Ala Cys Ala Cys Pro Leu				
109	114	119	124	
act gat gct gag tgt gtt gaa tgt gaa cga ggc gtg tgg gac cat gga				615
Thr Asp Ala Glu Cys Val Glu Cys Glu Arg Gly Val Trp Asp His Gly				
125	130	135	140	
ggc aga ata ttc agt tgt tct ttt tgc cat aac ttt ctc tgt gaa gat				663
Gly Arg Ile Phe Ser Cys Ser Phe Cys His Asn Phe Leu Cys Glu Asp				
141	146	151	156	
gat caa ttt gag cat caa gcc agc tgc cag gtt tta gag gca gaa aca				711
Asp Gln Phe Glu His Gln Ala Ser Cys Gln Val Leu Glu Ala Glu Thr				
157	162	167	172	
ttt aaa tgt gtt tca tgc aat cgg ctt ggt cag cac tca tgt ctc cgt				759
Phe Lys Cys Val Ser Cys Asn Arg Leu Gly Gln His Ser Cys Leu Arg				
173	178	183	188	
tgt aag gct tgt ttc tgt gat gat cat aca agg agc aaa gtg ttt aag				807
Cys Lys Ala Cys Phe Cys Asp Asp His Thr Arg Ser Lys Val Phe Lys				
189	194	199	204	
caa gaa aaa gga aaa cag cct cct tgt cct aaa tgt ggg cat gaa act				855
Gln Glu Lys Gly Lys Gln Pro Pro Cys Pro Lys Cys Gly His Glu Thr				
205	210	215	220	
cag gag act aag gac ctt agc atg tca aca cgc tcc ctg aaa ttt ggc				903
Gln Glu Thr Lys Asp Leu Ser Met Ser Thr Arg Ser Leu Lys Phe Gly				
221	226	231	236	
agg cag act gga ggt gaa gag gga gat gga gct tct ggg tat gat gct				951
Arg Gln Thr Gly Gly Glu Glu Gly Asp Gly Ala Ser Gly Tyr Asp Ala				
237	242	247	252	

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Tyr Trp Lys Asn Leu Ser Ser Asp Lys Tyr Gly Asp Thr Ser Tyr His	
253 258 263 268	
gat gag gag gag gat gag tat gaa gca gag gat gat gaa gag gaa gaa	1047
Asp Glu Glu Glu Asp Glu Tyr Glu Ala Glu Asp Asp Glu Glu Glu Glu	
269 274 279 284	
gat gaa ggc aga aag gat tca gat act gag tca tca gat ttg ttt act	1095
Asp Glu Gly Arg Lys Asp Ser Asp Thr Glu Ser Ser Asp Leu Phe Thr	
285 290 295 300	
aat ttg aat tta gga agg acc tat gct agt ggc tat <sup>3</sup> gct cac tat gag	1143
Asn Leu Asn Leu Gly Arg Thr Tyr Ala Ser Gly Tyr Ala His Tyr Glu	
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gaa caa gag aac tag gggagctgct ctgggtggccg tgtgtgagag gagcaggagt	1198
Glu Gln Glu Asn *	
317	
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 <222> (25) .. (576)

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Gly Ser Gly Gly Val Gly Lys Ser Ala Leu Thr Val Gln Phe Val Thr		
10 15 20 25		
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Gly Thr Phe Ile Glu Lys Tyr Asp Pro Thr Ile Glu Asp Phe Tyr Arg		
26 31 36 41		
aag gag atc gag gtg gat tgc tgc ccg tgc gtg ctg gag atc ctg gac	195	
Lys Glu Ile Glu Val Asp Ser Ser Pro Ser Val Leu Glu Ile Leu Asp		
42 47 52 57		
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Thr Ala Gly Thr Glu Gln Phe Ala Ser Met Arg Asp Leu Tyr Ile Lys		
58 63 68 73		
aac ggc cag ggc ttc atc ctc gtc tac agc ctc gtc aac cag cag agc	291	
Asn Gly Gln Gly Phe Ile Leu Val Tyr Ser Leu Val Asn Gln Gln Ser		
74 79 84 89		
ttc cag gac atc aag ccc atg cgg gac cag atc atc cgc gtg aag cgg	339	
Phe Gln Asp Ile Lys Pro Met Arg Asp Gln Ile Ile Arg Val Lys Arg		
90 95 100 105		
tat gag aaa gtg cca gtc atc ttg gtt ggg aac aaa gtg gac ctg gaa	387	
Tyr Glu Lys Val Pro Val Ile Leu Val Gly Asn Lys Val Asp Leu Glu		
106 111 116 121		
agt gag aga gaa gta tgc tcc agc gaa ggc aga gcc ctt gct gaa gag	435	
Ser Glu Arg Glu Val Ser Ser Ser Glu Gly Arg Ala Leu Ala Glu Glu		
122 127 132 137		
tgg ggc tgc ccc ttt atg gaa act tcc gct aag agt aaa aca atg gtg	483	
Trp Gly Cys Pro Phe Met Glu Thr Ser Ala Lys Ser Lys Thr Met Val		
138 143 148 153		
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Asp Glu Leu Phe Ala Glu Ile Val Arg Gln Met Asn Tyr Ala Ala Gln		
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Pro Asp Lys Asp Asp Pro Cys Cys Ser Ala Cys Asn Ile Gln *		
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<210> 457
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<212> DNA
<213> Homo sapiens

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<221> CDS
<222> (177) .. (1835)

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acctgtgcgt ccctccgtcc cgccccgtcc cggggtcacc cggagacctg tccgct 176
atg cgg ctg cct cta gcc cca ggt cgg ctg cgg cgg ggc agc ccc 224
Met Arg Leu Leu Pro Leu Ala Pro Gly Arg Leu Arg Arg Gly Ser Pro
1 5 10 15

cgc cac ctg ccc tcc tgc agc cca gcg ctg cta ctg ctg gtg ctg ggc 272
Arg His Leu Pro Ser Cys Ser Pro Ala Leu Leu Leu Leu Val Leu Gly
17 22 27 32

ggc tgc ctg ggg gtc ttc ggg gtg gct gcg gga acc cgg agg ccc aac 320
Gly Cys Leu Gly Val Phe Gly Val Ala Ala Gly Thr Arg Arg Pro Asn
33 38 43 48

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Val Val Leu Leu Leu Thr Asp Asp Gln Asp Glu Val Leu Gly Gly Met	
49 54 59 64	
aca cca cta aag aaa acc aaa gct ctc atc gga gag atg ggg atg act	416
Thr Pro Leu Lys Lys Thr Lys Ala Leu Ile Gly Glu Met Gly Met Thr	
65 70 75 80	
ttt tcc agt gct tat gtg cca agt gct ctc tgc tgc ccc agc aga gcc	464
Phe Ser Ser Ala Tyr Val Pro Ser Ala Leu Cys Cys Pro Ser Arg Ala	
81 86 91 96	
agt atc ctg aca gga aag tac cca cat aat cat cac gtt gtg aac aac	512
Ser Ile Leu Thr Gly Lys Tyr Pro His Asn His His Val Val Asn Asn	
97 102 107 112	
act ctg gag ggg aac tgc agt agt aag tcc tgg cag aag atc caa gaa	560
Thr Leu Glu Gly Asn Cys Ser Ser Lys Ser Trp Gln Lys Ile Gln Glu	
113 118 123 128	
cca aat act ttc cca gca att ctc aga tca atg tgt ggt tat cag acc	608
Pro Asn Thr Phe Pro Ala Ile Leu Arg Ser Met Cys Gly Tyr Gln Thr	
129 134 139 144	
ttt ttt gca ggg aaa tat tta aat gag tac gga gcc cca gat gca ggt	656
Phe Phe Ala Gly Lys Tyr Leu Asn Glu Tyr Gly Ala Pro Asp Ala Gly	
145 150 155 160	
gga cta gaa cac gtt cct ctg ggt tgg agt tac tgg tat gcc ttg gaa	704
Gly Leu Glu His Val Pro Leu Gly Trp Ser Tyr Trp Tyr Ala Leu Glu	
161 166 171 176	
aag aat tct aag tat tat aat tac acc ctg tct atc aat ggg aag gca	752
Lys Asn Ser Lys Tyr Tyr Asn Tyr Thr Leu Ser Ile Asn Gly Lys Ala	
177 182 187 192	
cgg aag cat ggt gaa aac tat agt gtg gac tac ctg aca gat gtt ttg	800
Arg Lys His Gly Glu Asn Tyr Ser Val Asp Tyr Leu Thr Asp Val Leu	
193 198 203 208	
gct aat gtc tcc ttg gac ttt ctg gac tac aag tcc aac ttt gag ccc	848
Ala Asn Val Ser Leu Asp Phe Leu Asp Tyr Lys Ser Asn Phe Glu Pro	
209 214 219 224	
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Phe Phe Met Met Ile Ala Thr Pro Ala Pro His Ser Pro Trp Thr Ala	
225 230 235 240	
gca cct cag tac cag aag gct ttc cag aat gtc ttt gca cca aga aac	944
Ala Pro Gln Tyr Gln Lys Ala Phe Gln Asn Val Phe Ala Pro Arg Asn	
241 246 251 256	
aag aac ttc aac atc cat gga acg aac aag cac tgg tta att agg caa	992
Lys Asn Phe Asn Ile His Gly Thr Asn Lys His Trp Leu Ile Arg Gln	
257 262 267 272	
gcc aag act cca atg act aat tct tca ata cag ttt tta gat aat gca	1040



Ala Lys Thr Pro Met Thr Asn Ser Ser Ile Gln Phe Leu Asp Asn Ala	
273 278 283 288	
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Phe Arg Lys Arg Trp Gln Thr Leu Leu Ser Val Asp Asp Leu Val Glu	
289 294 299 304	
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Lys Leu Val Lys Arg Leu Glu Phe Thr Gly Glu Leu Asn Asn Thr Tyr	
305 310 315 320	
atc ttc tat acc tca gac aat ggc tat cac aca gga cag ttt tcc ttg	1184
Ile Phe Tyr Thr Ser Asp Asn Gly Tyr His Thr Gly Gln Phe Ser Leu	
321 326 331 336	
cca ata gac aag aga cag ctg tat gag ttt gat atc aaa gtt cca ctg	1232
Pro Ile Asp Lys Arg Gln Leu Tyr Glu Phe Asp Ile Lys Val Pro Leu	
337 342 347 352	
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Leu Val Arg Gly Pro Gly Ile Lys Pro Asn Gln Thr Ser Lys Met Leu	
353 358 363 368	
gtt gcc aac att gac ttg ggt cct act att ttg gac att gct ggc tac	1328
Val Ala Asn Ile Asp Leu Gly Pro Thr Ile Leu Asp Ile Ala Gly Tyr	
369 374 379 384	
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Asp Leu Asn Lys Thr Gln Met Asp Gly Met Ser Leu Leu Pro Ile Leu	
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449 454 459 464	
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Gln Tyr Cys Glu Phe Asp Asp Gln Glu Val Phe Val Glu Val Tyr Asn	
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Leu Thr Ala Asp Pro Asp Gln Ile Thr Asn Ile Ala Lys Thr Ile Asp	
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Pro Glu Leu Leu Gly Lys Met Asn Tyr Arg Leu Met Met Leu Gln Ser	

497	502	507	512	
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Cys Ser Gly Pro Thr	Cys Arg Thr Pro Gly	Val Phe Asp Pro Gly	Tyr	
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Arg Arg Phe Ser Lys	His Leu Leu *			
545	550			
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ggtgagacag caggggagga ggaagagctg tggtttgtaa cttgttcaac tcaggcaata 3480
agcgatttta gctttattta aagtcttctg tccagcttta agcactttgt aagacatggc 3540
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aagtgagcag cggggctcct gcctcccgcc ctgggtccccg aagaccccag aagaacccgg 180
aacttgcttc cattcggaat ccagggacca ccctttgcac tcagtaggcc tttgttttcc 240
tgcgtggaaa gcggttgggc ttgggaggcg      atg gag ccg gag ttc ttg tac 291
      Met Glu Pro Glu Phe Leu Tyr
              1              5

gac ctg ctg cag ctc ccc aag ggg gtg gag ccc cca gcg gag gag gag 339
Asp Leu Leu Gln Leu Pro Lys Gly Val Glu Pro Pro Ala Glu Glu Glu
  8              13              18              23

ctc tca aaa gga gga aag aag aaa tac ctg cca ccc act tcc cgg aag 387
Leu Ser Lys Gly Gly Lys Lys Lys Tyr Leu Pro Pro Thr Ser Arg Lys
  24              29              34              39

gac ccc aaa ttt gaa gaa ctg cag aag ctg cag gtg ttg atg gag tgg 435
Asp Pro Lys Phe Glu Glu Leu Gln Lys Leu Gln Val Leu Met Glu Trp
  40              45              50              55

atc aat gcc act ctt ctc ccc gag cac att gtg gtc cgc agc ctg gag 483
Ile Asn Ala Thr Leu Leu Pro Glu His Ile Val Val Arg Ser Leu Glu
  56              61              66              71

gag gac atg ttc gac ggg ctc atc cta cac cac cta ttc cag agg ctg 531

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Glu Asp Met Phe Asp Gly Leu Ile Leu His His Leu Phe Gln Arg Leu	
72 77 82 87	
gcg gcg ctc aag ctg gaa gca gag gac atc gcc ctg aca gcc aca agc	579
Ala Ala Leu Lys Leu Glu Ala Glu Asp Ile Ala Leu Thr Ala Thr Ser	
88 93 98 103	
cag aag cac aag ctc aca gtg gtg ctg gag gcc gtg aac cgg agt ctg	627
Gln Lys His Lys Leu Thr Val Val Leu Glu Ala Val Asn Arg Ser Leu	
104 109 114 119	
cag ctg gag gag tgg cag gcc aag tgg agc gtg gag agc atc ttc aac	675
Gln Leu Glu Glu Trp Gln Ala Lys Trp Ser Val Glu Ser Ile Phe Asn	
120 125 130 135	
aag gac ctg ttg tct acc ctg cac ctc ctt gtg gcc ctg gcc aag cgc	723
Lys Asp Leu Leu Ser Thr Leu His Leu Leu Val Ala Leu Ala Lys Arg	
136 141 146 151	
ttc cag ccc gac ctc tcc ctc cca acc aac gtc cag gtg gag gtc atc	771
Phe Gln Pro Asp Leu Ser Leu Pro Thr Asn Val Gln Val Glu Val Ile	
152 157 162 167	
act atc gag agc acc aaa agt ggt ctg aag tca gag aag ttg gtg gaa	819
Thr Ile Glu Ser Thr Lys Ser Gly Leu Lys Ser Glu Lys Leu Val Glu	
168 173 178 183	
cag ctc act gaa tac agc aca gac aag gac gag cct cca aag gac gtc	867
Gln Leu Thr Glu Tyr Ser Thr Asp Lys Asp Glu Pro Pro Lys Asp Val	
184 189 194 199	
ttt gat gaa tta ttt aag ctg gct ccg gag aaa gtg aac gca gtg aaa	915
Phe Asp Glu Leu Phe Lys Leu Ala Pro Glu Lys Val Asn Ala Val Lys	
200 205 210 215	
gag gcc atc gtg aac ttt gtc aac cag aag ctg gac cgc ctg ggc ctg	963
Glu Ala Ile Val Asn Phe Val Asn Gln Lys Leu Asp Arg Leu Gly Leu	
216 221 226 231	
tct gtg cag aat ctg gac acc cag ttt gca gat ggg gtc atc tta ctc	1011
Ser Val Gln Asn Leu Asp Thr Gln Phe Ala Asp Gly Val Ile Leu Leu	
232 237 242 247	
ttg ctg att gga caa ctt gaa ggc ttc ttc ctg cac tta aag gaa ttc	1059
Leu Leu Ile Gly Gln Leu Glu Gly Phe Phe Leu His Leu Lys Glu Phe	
248 253 258 263	
tac ctc act ccc aac tct cct gca gaa atg ctg cac aac gtc acc ctg	1107
Tyr Leu Thr Pro Asn Ser Pro Ala Glu Met Leu His Asn Val Thr Leu	
264 269 274 279	
gcg ctg gag ctg cct gaa gga cga ggg cct gct cag ctg ccc tgt cag	1155
Ala Leu Glu Leu Pro Glu Gly Arg Gly Pro Ala Gln Leu Pro Cys Gln	
280 285 290 295	
ccc tga agatatcgtg aacaaggatg ccaagagcac actgcgggtg ctctatggtc	1211
Pro *	

tgttctgcaa gcacacgcag aaggcacaca gggacaggac gcccacatgga gcccgaatt 1271  
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 accctgtctc ctgtctccat cgttggatta tctttgaacc cccttgtgtg gatcattttg 1451  
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 Met Ala Asp Thr Asp Leu Phe Met Glu Cys Glu Glu Glu Glu Leu Glu  
 1 5 10 15  
 cca tgg cag aaa atc agt gat gtc att gag gac tct gta gtt gaa gat 154  
 Pro Trp Gln Lys Ile Ser Asp Val Ile Glu Asp Ser Val Val Glu Asp  
 17 22 27 32  
 tat aat tca gtg gat aaa act acc aca gct ggc aat cct ttg gtc cag 202  
 Tyr Asn Ser Val Asp Lys Thr Thr Thr Ala Gly Asn Pro Leu Val Gln  
 33 38 43 48  
 caa ggt gga cag cca ctc atc ctg acc cag aat cca gcc cca ggt ctg 250  
 Gln Gly Gly Gln Pro Leu Ile Leu Thr Gln Asn Pro Ala Pro Gly Leu  
 49 54 59 64  
 ggc aca atg gtt act caa cca gta ttg agg cct gtt cag gtc atg cag 298  
 Gly Thr Met Val Thr Gln Pro Val Leu Arg Pro Val Gln Val Met Gln  
 65 70 75 80  
 aat gcc aat cat gtg act agt tcc cct gtg gcc tca caa cca ata ttt 346  
 Asn Ala Asn His Val Thr Ser Ser Pro Val Ala Ser Gln Pro Ile Phe  
 81 86 91 96  
 atc act acg cag gga ttt cct gta agg aat gtc cgg cct gta caa aat 394  
 Ile Thr Thr Gln Gly Phe Pro Val Arg Asn Val Arg Pro Val Gln Asn  
 97 102 107 112  
 gca atg aat cag gtt ggg att gtg ctg aac gta cag caa ggc caa acg 442

Ala Met Asn Gln Val Gly Ile Val Leu Asn Val Gln Gln Gly Gln Thr	
113 118 123 128	
gtt aga cca att aca cta gtt cca gcc cca ggt acc cag ttt gtt aag	490
Val Arg Pro Ile Thr Leu Val Pro Ala Pro Gly Thr Gln Phe Val Lys	
129 134 139 144	
ccg aca gtt gga gtt cca caa gtg ttc tcc cag atg acc cct gtg agg	538
Pro Thr Val Gly Val Pro Gln Val Phe Ser Gln Met Thr Pro Val Arg	
145 150 155 160	
cca ggc tcc aca atg cct gtg agg ccc acc acc aac acc ttc acc acc	586
Pro Gly Ser Thr Met Pro Val Arg Pro Thr Thr Asn Thr Phe Thr Thr	
161 166 171 176	
gtc atc ccg gcc act ctt acc att cga agc acc gtc cca cag tcc cag	634
Val Ile Pro Ala Thr Leu Thr Ile Arg Ser Thr Val Pro Gln Ser Gln	
177 182 187 192	
tcc cag cag acc aag tcc act ccc agc act tct acc act ccc act gcc	682
Ser Gln Gln Thr Lys Ser Thr Pro Ser Thr Ser Thr Thr Pro Thr Ala	
193 198 203 208	
aca cag cca acc tca ctg ggg caa cta gct gtt cag tct cca ggc cag	730
Thr Gln Pro Thr Ser Leu Gly Gln Leu Ala Val Gln Ser Pro Gly Gln	
209 214 219 224	
tca aac cag acc acg aat ccc aag cta gct ccc tcc ttc ccc tct cca	778
Ser Asn Gln Thr Thr Asn Pro Lys Leu Ala Pro Ser Phe Pro Ser Pro	
225 230 235 240	
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Pro Ala Val Ser Ile Ala Ser Phe Val Thr Val Lys Arg Pro Gly Val	
241 246 251 256	
aca ggc gaa aat agc aat gaa gtg gcc aaa ttg gtg aat acc ctt aac	874
Thr Gly Glu Asn Ser Asn Glu Val Ala Lys Leu Val Asn Thr Leu Asn	
257 262 267 272	
acc atc cct tcc ctg ggc cag agt cct ggg cca gtg gtg gtg tcc aac	922
Thr Ile Pro Ser Leu Gly Gln Ser Pro Gly Pro Val Val Val Ser Asn	
273 278 283 288	
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Asn Ser Ser Ala His Gly Ser Gln Arg Thr Ser Gly Pro Glu Ser Ser	
289 294 299 304	
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Met Lys Val Thr Ser Ser Ile Pro Val Phe Asp Leu Gln Asp Gly Gly	
305 310 315 320	
cgg aaa ata tgt cca cga tgt aat gct caa ttt cgt gtt act gaa gct	1066
Arg Lys Ile Cys Pro Arg Cys Asn Ala Gln Phe Arg Val Thr Glu Ala	
321 326 331 336	
ttg aga ggt cac atg tgt tac tgt tgc cca gaa atg gtt gaa tac cag	1114
Leu Arg Gly His Met Cys Tyr Cys Cys Pro Glu Met Val Glu Tyr Gln	

337	342	347	352	
aag aaa gga aag tcc ctg gat tca gaa ccc agt gtc cca tca gca gca				1162
Lys Lys Gly Lys Ser Leu Asp Ser Glu Pro Ser Val Pro Ser Ala Ala				
353	358	363	368	
aag ccc cca tcc cct gag aaa aca gct cct gtt gct tcc aca ccc tct				1210
Lys Pro Pro Ser Pro Glu Lys Thr Ala Pro Val Ala Ser Thr Pro Ser				
369	374	379	384	
tct aca cct att cct gct ctg tca ccg cct acc aaa gta cca gaa cca				1258
Ser Thr Pro Ile Pro Ala Leu Ser Pro Pro Thr Lys Val Pro Glu Pro				
385	390	395	400	
aat gag aac gtg ggc gat gcc gtc cag acc aaa ctc att atg ctt gta				1306
Asn Glu Asn Val Gly Asp Ala Val Gln Thr Lys Leu Ile Met Leu Val				
401	406	411	416	
gat gac ttc tac tat gga cgg gat ggt ggc aaa gta gcc cag ctc aca				1354
Asp Asp Phe Tyr Tyr Gly Arg Asp Gly Gly Lys Val Ala Gln Leu Thr				
417	422	427	432	
aat ttc cct aag gtc gcc aca tct ttc cga tgc cca cat tgt acc aaa				1402
Asn Phe Pro Lys Val Ala Thr Ser Phe Arg Cys Pro His Cys Thr Lys				
433	438	443	448	
agg cta aaa aac aat att cga ttc atg aac cat atg aaa cac cac gta				1450
Arg Leu Lys Asn Asn Ile Arg Phe Met Asn His Met Lys His His Val				
449	454	459	464	
gaa ctc gat cag cag aac ggt gag gta gat ggt cac act atc tgc cag				1498
Glu Leu Asp Gln Gln Asn Gly Glu Val Asp Gly His Thr Ile Cys Gln				
465	470	475	480	
cac tgt tac cgc cag ttt tcc act ccc ttc cag ctt cag tgc cac ttg				1546
His Cys Tyr Arg Gln Phe Ser Thr Pro Phe Gln Leu Gln Cys His Leu				
481	486	491	496	
gaa aat gtt cat agt ccc tat gaa tct act acc aag tgc aag atc tgt				1594
Glu Asn Val His Ser Pro Tyr Glu Ser Thr Thr Lys Cys Lys Ile Cys				
497	502	507	512	
gaa tgg gcg ttt gaa agt gag cca cta ttt ctc cag cat atg aag gat				1642
Glu Trp Ala Phe Glu Ser Glu Pro Leu Phe Leu Gln His Met Lys Asp				
513	518	523	528	
act cat aag cct gga gag atg cct tat gtt tgc cag gtg tgt caa tat				1690
Thr His Lys Pro Gly Glu Met Pro Tyr Val Cys Gln Val Cys Gln Tyr				
529	534	539	544	
cgc tcc tca ctc tac tct gag gta gat gtc cat ttt cgg atg atc cat				1738
Arg Ser Ser Leu Tyr Ser Glu Val Asp Val His Phe Arg Met Ile His				
545	550	555	560	
gag gat acc cgg cat ctg ctc tgc cct tat tgc ctg aag gtc ttc aaa				1786
Glu Asp Thr Arg His Leu Leu Cys Pro Tyr Cys Leu Lys Val Phe Lys				
561	566	571	576	

aat ggc aat gca ttc caa cag cat tac atg agg cac cag aag aga aat	1834
Asn Gly Asn Ala Phe Gln Gln His Tyr Met Arg His Gln Lys Arg Asn	
577 582 587 592	
ggt tat cac tgc aac aaa tgc cgg ctg cag ttt ctc ttt gcc aag gac	1882
Val Tyr His Cys Asn Lys Cys Arg Leu Gln Phe Leu Phe Ala Lys Asp	
593 598 603 608	
aaa att gaa cac aag ctt caa cac cat aaa acc ttc cgt aaa ccc aag	1930
Lys Ile Glu His Lys Leu Gln His His Lys Thr Phe Arg Lys Pro Lys	
609 614 619 624	
cag ctg gag ggc ttg aaa cca ggc acc aag gtg aca atc cgg gct tcc	1978
Gln Leu Glu Gly Leu Lys Pro Gly Thr Lys Val Thr Ile Arg Ala Ser	
625 630 635 640	
cga ggg cag cca cga act gtt cct gta tcc tct aat gat aca cct ccc	2026
Arg Gly Gln Pro Arg Thr Val Pro Val Ser Ser Asn Asp Thr Pro Pro	
641 646 651 656	
agc gcc ttg cag gag gca gca ccg ctg acc tcc tca atg gac cct ctg	2074
Ser Ala Leu Gln Glu Ala Ala Pro Leu Thr Ser Ser Met Asp Pro Leu	
657 662 667 672	
cct gtc ttc ctt tat ccc cct gtc cag cgc agc atc cag aag aga gct	2122
Pro Val Phe Leu Tyr Pro Pro Val Gln Arg Ser Ile Gln Lys Arg Ala	
673 678 683 688	
ggt agg aaa atg agt gtc atg ggc cgg cag aca tgc ctg gag tgc agc	2170
Val Arg Lys Met Ser Val Met Gly Arg Gln Thr Cys Leu Glu Cys Ser	
689 694 699 704	
ttc gag atc cca gac ttc cct aat cat ttc cct act tac gta cac tgc	2218
Phe Glu Ile Pro Asp Phe Pro Asn His Phe Pro Thr Tyr Val His Cys	
705 710 715 720	
tct ctg tgt cgc tat agc acc tgc tgt tct cga gct tat gcc aac cac	2266
Ser Leu Cys Arg Tyr Ser Thr Cys Cys Ser Arg Ala Tyr Ala Asn His	
721 726 731 736	
atg atc aac aat cat gtt cca cgg aag agc ccc aag tat ttg gct ttg	2314
Met Ile Asn Asn His Val Pro Arg Lys Ser Pro Lys Tyr Leu Ala Leu	
737 742 747 752	
ttt aaa aat tct gtg agt gga atc aag ctg gcc tgc act tca tgt acc	2362
Phe Lys Asn Ser Val Ser Gly Ile Lys Leu Ala Cys Thr Ser Cys Thr	
753 758 763 768	
ttt gtt acc tct gtg ggc gat gct atg gcc aag cat ttg gta ttc aac	2410
Phe Val Thr Ser Val Gly Asp Ala Met Ala Lys His Leu Val Phe Asn	
769 774 779 784	
ccc tct cac aga tcc agc agc atc ctg cca cgg gga ctc act tgg ata	2458
Pro Ser His Arg Ser Ser Ser Ile Leu Pro Arg Gly Leu Thr Trp Ile	
785 790 795 800	



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Asn Pro Gln Arg Arg Ile Arg Arg Trp Leu Arg Arg Phe Gln Ala Ser	
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Met Ala Asp Thr Asp Leu Phe Met Glu Cys Glu Glu Glu Glu Leu Glu  
1 5 10 15

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Pro Trp Gln Lys Ile Ser Asp Val Ile Glu Asp Ser Val Val Glu Asp	
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Tyr Asn Ser Val Asp Lys Thr Thr Thr Val Ser Val Ser Gln Gln Pro	
33 38 43 48	
gtc tcg gct cca gtg ccc atc gct gcc cat gct tct gtt gct ggg cac	250
Val Ser Ala Pro Val Pro Ile Ala Ala His Ala Ser Val Ala Gly His	
49 54 59 64	
ctc tct aca tcc acc acc gtt agt agc agc ggg gca cag aac agc gac	298
Leu Ser Thr Ser Thr Thr Val Ser Ser Ser Gly Ala Gln Asn Ser Asp	
65 70 75 80	
agt aca aag aag act ctt gtc aca cta att gcc aac aac aat gct ggc	346
Ser Thr Lys Lys Thr Leu Val Thr Leu Ile Ala Asn Asn Asn Ala Gly	
81 86 91 96	
aat cct ttg gtc cag caa ggt gga cag cca ctc atc ctg acc cag aat	394
Asn Pro Leu Val Gln Gln Gly Gly Gln Pro Leu Ile Leu Thr Gln Asn	
97 102 107 112	
cca gcc cca ggt ctg ggc aca atg gtt act caa cca gta ttg agg cct	442
Pro Ala Pro Gly Leu Gly Thr Met Val Thr Gln Pro Val Leu Arg Pro	
113 118 123 128	
gtt cag gtc atg cag aat gcc aat cat gtg act agt tcc cct gtg gcc	490
Val Gln Val Met Gln Asn Ala Asn His Val Thr Ser Ser Pro Val Ala	
129 134 139 144	
tca caa cca ata ttt atc act acg cag gga ttt cct gta agg aat gtc	538
Ser Gln Pro Ile Phe Ile Thr Thr Gln Gly Phe Pro Val Arg Asn Val	
145 150 155 160	
cgg cct gta caa aat gca atg aat cag gtt ggg att gtg ctg aac gta	586
Arg Pro Val Gln Asn Ala Met Asn Gln Val Gly Ile Val Leu Asn Val	
161 166 171 176	
cag caa ggc caa acg gtt aga cca att aca cta gtt cca gcc cca ggt	634
Gln Gln Gly Gln Thr Val Arg Pro Ile Thr Leu Val Pro Ala Pro Gly	
177 182 187 192	
acc cag ttt gtt aag ccg aca gtt gga gtt cca caa gtg ttc tcc cag	682
Thr Gln Phe Val Lys Pro Thr Val Gly Val Pro Gln Val Phe Ser Gln	
193 198 203 208	
atg acc cct gtg agg cca ggc tcc aca atg cct gtg agg ccc acc acc	730
Met Thr Pro Val Arg Pro Gly Ser Thr Met Pro Val Arg Pro Thr Thr	
209 214 219 224	
aac acc ttc acc acc gtc atc ccg gcc act ctt acc att cga agc acc	778
Asn Thr Phe Thr Thr Val Ile Pro Ala Thr Leu Thr Ile Arg Ser Thr	
225 230 235 240	
gtc cca cag tcc cag tcc cag cag acc aag tcc act ccc agc act tct	826

Val	Pro	Gln	Ser	Gln	Ser	Gln	Gln	Thr	Lys	Ser	Thr	Pro	Ser	Thr	Ser	
241					246					251					256	
acc	act	ccc	act	gcc	aca	cag	cca	acc	tca	ctg	ggg	caa	cta	gct	gtt	874
Thr	Thr	Pro	Thr	Ala	Thr	Gln	Pro	Thr	Ser	Leu	Gly	Gln	Leu	Ala	Val	
257					262					267					272	
cag	tct	cca	ggc	cag	tca	aac	cag	acc	acg	aat	ccc	aag	cta	gct	ccc	922
Gln	Ser	Pro	Gly	Gln	Ser	Asn	Gln	Thr	Thr	Asn	Pro	Lys	Leu	Ala	Pro	
273					278					283					288	
tcc	ttc	ccc	tct	cca	cct	gca	gtg	agc	att	gcc	agc	ttt	gtc	act	gtg	970
Ser	Phe	Pro	Ser	Pro	Pro	Ala	Val	Ser	Ile	Ala	Ser	Phe	Val	Thr	Val	
289					294					299					304	
aag	cga	cct	ggg	gtt	aca	ggc	gaa	aat	agc	aat	gaa	gtg	gcc	aaa	ttg	1018
Lys	Arg	Pro	Gly	Val	Thr	Gly	Glu	Asn	Ser	Asn	Glu	Val	Ala	Lys	Leu	
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gtg	aat	acc	ctt	aac	acc	atc	cct	tcc	ctg	ggc	cag	agt	cct	ggg	cca	1066
Val	Asn	Thr	Leu	Asn	Thr	Ile	Pro	Ser	Leu	Gly	Gln	Ser	Pro	Gly	Pro	
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Val	Val	Val	Ser	Asn	Asn	Ser	Ser	Ala	His	Gly	Ser	Gln	Arg	Thr	Ser	
337					342					347					352	
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Gly	Pro	Glu	Ser	Ser	Met	Lys	Val	Thr	Ser	Ser	Ile	Pro	Val	Phe	Asp	
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Arg	Val	Thr	Glu	Ala	Leu	Arg	Gly	His	Met	Cys	Tyr	Cys	Cys	Pro	Glu	
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Val	Pro	Ser	Ala	Ala	Lys	Pro	Pro	Ser	Pro	Glu	Lys	Thr	Ala	Pro	Val	
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Leu	Ile	Met	Leu	Val	Asp	Asp	Phe	Tyr	Tyr	Gly	Arg	Asp	Gly	Gly	Lys	

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Met Lys His His Val Glu Leu Asp Gln Gln Asn Gly Glu Val Asp Gly				
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His Thr Ile Cys Gln His Cys Tyr Arg Gln Phe Ser Thr Pro Phe Gln				
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Leu Gln Cys His Leu Glu Asn Val His Ser Pro Tyr Glu Ser Thr Thr				
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Lys Cys Lys Ile Cys Glu Trp Ala Phe Glu Ser Glu Pro Leu Phe Leu				
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Gln His Met Lys Asp Thr His Lys Pro Gly Glu Met Pro Tyr Val Cys				
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Phe Arg Met Ile His Glu Asp Thr Arg His Leu Leu Cys Pro Tyr Cys				
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Leu Lys Val Phe Lys Asn Gly Asn Ala Phe Gln Gln His Tyr Met Arg				
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Leu Phe Ala Lys Asp Lys Ile Glu His Lys Leu Gln His His Lys Thr				
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Phe Arg Lys Pro Lys Gln Leu Glu Gly Leu Lys Pro Gly Thr Lys Val				
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Thr Ile Arg Ala Ser Arg Gly Gln Pro Arg Thr Val Pro Val Ser Ser				
689	694	699	704	

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Ile Gln Lys Arg Ala Val Arg Lys Met Ser Val Met Gly Arg Gln Thr	
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Cys Thr Ser Cys Thr Phe Val Thr Ser Val Gly Asp Ala Met Ala Lys	
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Pro Trp Gln Lys Ile Ser Asp Val Ile Glu Asp Ser Val Val Glu Asp
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Tyr Asn Ser Val Asp Lys Thr Thr Thr Ala Gly Asn Pro Leu Val Gln
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Ile Thr Thr Gln Gly Phe Pro Val Arg Asn Val Arg Pro Val Gln Asn	
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Phe	Ser	Thr	Pro	Phe	Gln	Leu	Gln	Cys	His	Leu	Glu	Asn	Val	His	Ser	
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Pro	Tyr	Glu	Ser	Thr	Thr	Lys	Cys	Lys	Ile	Cys	Glu	Trp	Ala	Phe	Glu	

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Lys Glu Ser Gly Tyr Ser Asp Asp Glu Ile Met Glu Leu Trp Ser Thr	
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Arg Val Trp Gln Lys His Thr Ala Cys Gln Arg Ser Lys Gly Met Leu	
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Val Met Asp Cys His Arg Thr His Leu Ser Glu Glu Val Leu Ala Met	
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Leu Ser Ala Ser Ser Thr Leu Pro Ala Val Val Pro Ala Gly Cys Ser	
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Ser Lys Ile Gln Pro Leu Asp Val Cys Ile Lys Arg Thr Val Lys Asn	
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Phe Leu His Lys Lys Trp Lys Glu Gln Ala Arg Glu Met Ala Asp Thr	
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Ala Cys Asp Ser Asp Val Leu Leu Gln Leu Val Leu Val Trp Leu Gly	
1265	1270 1275 1280
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Glu Val Leu Gly Val Ile Gly Asp Cys Pro Glu Leu Val Gln Arg Ser	
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Pro Thr Arg Asn Ala Asp Met Gln Glu Glu Leu Ile Ala Ser Leu Glu	
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Glu Gln Leu Lys Leu Ser Gly Glu His Ser Glu Ser Ser Thr Pro Arg	
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ccc aga tca tct cct gaa gag aca att gag cct gaa agt ctt cac cag	4138
Pro Arg Ser Ser Pro Glu Glu Thr Ile Glu Pro Glu Ser Leu His Gln	
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Leu Phe Glu Gly Glu Ser Glu Thr Glu Ser Phe Tyr Gly Phe Glu Glu	
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Val Pro Gly Thr Arg Lys Cys Glu Leu Ala Arg Ser Cys Ser Leu Gly
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Val Phe Gly Val Arg Met Ala Leu Glu Gly Met Ser Lys Arg Lys Arg
29             34             39             44

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Lys Arg Ser Val Gln Glu Gly Glu Asn Pro Asp Asp Gly Val Arg Gly
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Ser Pro Pro Glu Asp Tyr Arg Leu Gly Gln Val Ala Ser Ser Leu Phe
61             66             71             76

cgc ggc gaa cac cat tcc aga ggt ggc acc ggt cgg ctg gcg tcc ctc      288
Arg Gly Glu His His Ser Arg Gly Gly Thr Gly Arg Leu Ala Ser Leu
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ttc agt tct ctg gag ccc cag att caa ccc gtg tac gtg cct gtg cct      336
Phe Ser Ser Leu Glu Pro Gln Ile Gln Pro Val Tyr Val Pro Val Pro
93             98             103            108

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Lys Gln Thr Ile Lys Lys Thr Lys Arg Asn Glu Glu Glu Glu Ser Thr
109            114            119            124

tcc cag att gaa aga cca ctt tcg caa gaa cct gcc aaa aaa gtg aaa      432
Ser Gln Ile Glu Arg Pro Leu Ser Gln Glu Pro Ala Lys Lys Val Lys
125            130            135            140

gcg aag aag aaa cac act aac gca gaa aaa aag ttg gca gac agg gaa      480
Ala Lys Lys Lys His Thr Asn Ala Glu Lys Lys Leu Ala Asp Arg Glu
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Ser Ala Leu Ala Ser Ala Asp Leu Glu Glu Glu Ile His Gln Lys Gln	
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Gly Gln Lys Arg Lys Asn Ser Gln Pro Gly Val Lys Val Ala Asp Arg	
173 178 183 188	
aaa ata ctt gat gac aca gaa gac aca gtt gtc agt caa aga aag aaa	624
Lys Ile Leu Asp Asp Thr Glu Asp Thr Val Val Ser Gln Arg Lys Lys	
189 194 199 204	
att caa atc aac caa gaa gaa gag aga tta aag aat gag aga act gtg	672
Ile Gln Ile Asn Gln Glu Glu Glu Arg Leu Lys Asn Glu Arg Thr Val	
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Phe Val Gly Asn Leu Pro Val Thr Cys Asn Lys Lys Lys Leu Lys Ser	
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Phe Phe Lys Glu Tyr Gly Gln Ile Glu Ser Val Arg Phe Arg Ser Leu	
237 242 247 252	
att cca gca gag gga acg cta tcc aaa aag ttg gca gca ata aaa cgt	816
Ile Pro Ala Glu Gly Thr Leu Ser Lys Lys Leu Ala Ala Ile Lys Arg	
253 258 263 268	
aaa att cat cct gat cag aaa aat att aat gcc tat gtt gtg ttt aag	864
Lys Ile His Pro Asp Gln Lys Asn Ile Asn Ala Tyr Val Val Phe Lys	
269 274 279 284	
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Arg Asp Lys Arg Ser Val Phe Val Gly Asn Leu Pro Tyr Lys Val Glu	
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Val Arg Ile Val Arg Asp Lys Met Thr Gly Ile Gly Lys Gly Phe Gly	
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Tyr Val Leu Phe Glu Asn Thr Asp Ser Val His Leu Ala Leu Lys Leu	
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aat aat tct gaa ctc atg ggg aga aaa ctc aga gtc atg cgt tct gtt	1200



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Met Trp Asn Met Leu Ile Val	
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Gly His Val Ser Ile Ile Leu Leu Gly Ala Thr Gly Asp Leu Ala Lys	
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Lys Tyr Leu Trp Gln Gly Leu Phe Gln Leu Tyr Leu Asp Glu Ala Gly	
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Arg Gly His Ser Phe Ser Phe His Gly Ala Ala Leu Thr Ala Pro Lys	
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Gln Gly Gln Glu Leu Met Ala Lys Ala Leu Glu Ser Leu Ser Cys Pro	
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Lys Asp Met Ala Pro Ser His Cys Ala Glu His Lys Asp Gln Phe Leu	
88 93 98 103	
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Gln Leu Ser Gln Tyr Arg Gln Leu Lys Thr Ala Glu Asp Tyr Gln Ala	
104 109 114 119	
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Ala Gly Arg Ile Phe Tyr Phe Ser Val Pro Pro Phe Ala Tyr Glu Asp	
136 141 146 151	
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Ile Ala Arg Asn Ile Asn Ser Ser Cys Arg Pro Gly Pro Gly Ala Trp	
152 157 162 167	
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Gln Gln Leu Ala Thr Glu Leu Gly Thr Phe Phe Gln Glu Glu Glu Met	
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Pro Phe Arg Asp Gln Asn Arg Lys Ala Leu Asp Gly Leu Trp Asn Arg	
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His His Val Glu Arg Val Glu Ile Ile Met Lys Glu Thr Val Asp Ala	
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Gln Tyr Gln Ser Tyr Ser Glu Gln Val Arg Arg Glu Leu Gln Lys Pro	
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Asp Ser Phe His Ser Leu Thr Pro Thr Phe Ala Gly Val Leu Val His	
328 333 338 343	
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Ile Asp Asn Leu Arg Trp Glu Gly Val Pro Phe Ile Leu Met Ser Gly	
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aaa gcc ttg gac gag aga gtg ggc tac gct cgg atc ttg ttc aag aac	1397
Lys Ala Leu Asp Glu Arg Val Gly Tyr Ala Arg Ile Leu Phe Lys Asn	
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Gln Cys Leu Pro Arg Gln Leu Val Phe His Ile Gly His Gly Asp Leu	
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Gly Ser Pro Ala Val Leu Val Ser Arg Asn Leu Phe Arg Pro Ser Leu	
408 413 418 423	
ccc tcc agc tgg aag gaa atg gag gga cca cct ggg ctc cgc ctt ttc	1589



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488 493 498 503	
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Tyr Tyr Asn Ile His Pro Met Pro Val His Leu Gln Gln Arg Leu Cys	

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792				
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Asp Asp Lys Leu Asn Lys Ile Asn Asp Arg Trp Gln His Leu Phe Asp	
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Cys Ala Met Ser Met Glu Arg Arg Met Lys Ile Glu Glu Thr Trp Arg	
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Thr Asn Lys Ile Asp Gln Leu Ile Val Phe Gly Glu Gln Leu Ile Gln	
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Ser Glu Asn Glu Thr Asp Met Glu Asp Pro Arg Glu Ile Gln Thr Asp	
568 573 578 583	
tct tgg cgt aaa cgg gga gag agc gag gaa ccg tca tct cct cag tcc	2248
Ser Trp Arg Lys Arg Gly Glu Ser Glu Glu Pro Ser Ser Pro Gln Ser	
584 589 594 599	
ctg tgt cat cta gtg gcc cca ggg cac gag cgg tct ggc tgc gag acc	2296
Leu Cys His Leu Val Ala Pro Gly His Glu Arg Ser Gly Cys Glu Thr	
600 605 610 615	
cct gtc agc gtg gac tcc atc ccc ctg gag tgg gac cac aca ggc gac	2344

Pro	Val	Ser	Val	Asp	Ser	Ile	Pro	Leu	Glu	Trp	Asp	His	Thr	Gly	Asp	
616					621					626					631	
gtg	ggg	ggc	tcc	tcc	tct	cac	gaa	gag	gac	gag	gag	ggc	cca	tac	tac	2392
Val	Gly	Gly	Ser	Ser	Ser	His	Glu	Glu	Asp	Glu	Glu	Gly	Pro	Tyr	Tyr	
632					637					642					647	
agc	gca	ctg	tca	ggt	aaa	tcc	att	tcg	gat	ggc	cac	tcg	tgg	cat	gtt	2440
Ser	Ala	Leu	Ser	Gly	Lys	Ser	Ile	Ser	Asp	Gly	His	Ser	Trp	His	Val	
648					653					658					663	
ccc	gac	agc	cct	tcc	tgt	ccc	gag	cat	cac	tac	aag	caa	atg	gaa	ggt	2488
Pro	Asp	Ser	Pro	Ser	Cys	Pro	Glu	His	His	Tyr	Lys	Gln	Met	Glu	Gly	
664					669					674					679	
gac	agg	aat	gtt	cca	cct	gtt	ccc	cct	gcg	tcc	agc	acc	cct	tat	aaa	2536
Asp	Arg	Asn	Val	Pro	Pro	Val	Pro	Pro	Ala	Ser	Ser	Thr	Pro	Tyr	Lys	
680					685					690					695	
cca	ccc	tat	gga	aag	cta	cta	tta	cct	cca	ggc	acg	gat	ggt	ggc	aaa	2584
Pro	Pro	Tyr	Gly	Lys	Leu	Leu	Leu	Pro	Pro	Gly	Thr	Asp	Gly	Gly	Lys	
696					701					706					711	
gaa	ggc	ccg	cga	gtc	ctg	aat	ggc	aac	cca	cag	cag	gaa	gac	ggg	gga	2632
Glu	Gly	Pro	Arg	Val	Leu	Asn	Gly	Asn	Pro	Gln	Gln	Glu	Asp	Gly	Gly	
712					717					722					727	
ctg	gcc	ggt	atc	aca	gag	cag	cag	tca	ggt	gcc	ttc	gac	aga	tgg	gag	2680
Leu	Ala	Gly	Ile	Thr	Glu	Gln	Gln	Ser	Gly	Ala	Phe	Asp	Arg	Trp	Glu	
728					733					738					743	
atg	att	caa	gca	cag	gag	ctt	cac	aat	aag	ctc	aaa	ata	aaa	caa	aat	2728
Met	Ile	Gln	Ala	Gln	Glu	Leu	His	Asn	Lys	Leu	Lys	Ile	Lys	Gln	Asn	
744					749					754					759	
ttg	caa	cag	ctg	aac	tct	gat	atc	agc	gcc	atc	act	act	tgg	ctg	aaa	2776
Leu	Gln	Gln	Leu	Asn	Ser	Asp	Ile	Ser	Ala	Ile	Thr	Thr	Trp	Leu	Lys	
760					765					770					775	
aaa	act	gaa	gca	gag	ctg	gaa	atg	tta	aag	atg	gca	aag	cct	ccc	tct	2824
Lys	Thr	Glu	Ala	Glu	Leu	Glu	Met	Leu	Lys	Met	Ala	Lys	Pro	Pro	Ser	
776					781					786					791	
gat	atc	cag	gaa	ata	gaa	ctg	aga	gtg	aag	aga	ctg	cag	gag	ata	ctg	2872
Asp	Ile	Gln	Glu	Ile	Glu	Leu	Arg	Val	Lys	Arg	Leu	Gln	Glu	Ile	Leu	
792					797					802					807	
aaa	gcc	ttt	gac	act	tac	aag	gca	tta	gtg	gtc	tct	gtc	aac	gtg	agc	2920
Lys	Ala	Phe	Asp	Thr	Tyr	Lys	Ala	Leu	Val	Val	Ser	Val	Asn	Val	Ser	
808					813					818					823	
agc	aag	gaa	ttt	ctg	caa	acc	gag	agc								

840	845	850	855	
gtg gac agc tgg aga ggg ggc tta cga cag tgc ctc atg cag tgc cag				3064
Val Asp Ser Trp Arg Gly Gly Leu Arg Gln Ser Leu Met Gln Cys Gln				
856	861	866	871	
gac ttc cac cag ttg agt caa aat ctg ctg ctg tgg tta gcg agt gcc				3112
Asp Phe His Gln Leu Ser Gln Asn Leu Leu Leu Trp Leu Ala Ser Ala				
872	877	882	887	
aag aac cgg agg cag aag gct cat gtc acc gat cca aag gca gac ccc				3160
Lys Asn Arg Arg Gln Lys Ala His Val Thr Asp Pro Lys Ala Asp Pro				
888	893	898	903	
cgg gct ctc cta gag tgt cgg agg gaa cta atg caa ctg gaa aag gag				3208
Arg Ala Leu Leu Glu Cys Arg Arg Glu Leu Met Gln Leu Glu Lys Glu				
904	909	914	919	
ctg gta gaa cgt caa cct caa gtg gac atg tta cag gag att tca aac				3256
Leu Val Glu Arg Gln Pro Gln Val Asp Met Leu Gln Glu Ile Ser Asn				
920	925	930	935	
agc ctt ctc att aag gga cat gga gaa gac tgt att gaa gct gaa gaa				3304
Ser Leu Leu Ile Lys Gly His Gly Glu Asp Cys Ile Glu Ala Glu Glu				
936	941	946	951	
aag gtg cat gtt att gag aag aaa ctc aaa cag tta cgg gag caa gtg				3352
Lys Val His Val Ile Glu Lys Lys Leu Lys Gln Leu Arg Glu Gln Val				
952	957	962	967	
tcc caa gat tta atg gcc ttg cag gga acc cag aac cca gcc tca ccc				3400
Ser Gln Asp Leu Met Ala Leu Gln Gly Thr Gln Asn Pro Ala Ser Pro				
968	973	978	983	
ctg ccc agc ttc gac gag gta gac tgc ggg gac cag cct cct gca aca				3448
Leu Pro Ser Phe Asp Glu Val Asp Ser Gly Asp Gln Pro Pro Ala Thr				
984	989	994	999	
tcc gtg cca gct ccc cga gca aag cag ttc aga gca gtg aga act aca				3496
Ser Val Pro Ala Pro Arg Ala Lys Gln Phe Arg Ala Val Arg Thr Thr				
1000	1005	1010	1015	
gaa ggc gag gag gag aca gag agc agg gtc ccc ggc agc aca cgg cca				3544
Glu Gly Glu Glu Glu Thr Glu Ser Arg Val Pro Gly Ser Thr Arg Pro				
1016	1021	1026	1031	
cag cgc tcc ttc ctc tca agg gtg gtc cgg gca gcc cta ccc ctg cag				3592
Gln Arg Ser Phe Leu Ser Arg Val Val Arg Ala Ala Leu Pro Leu Gln				
1032	1037	1042	1047	
ctg ctc ctc ctg ctg ctg ctg ctc ctg gcc tgc ctg ctg ccc tcc tcc				3640
Leu Leu Leu Leu Leu Leu Leu Leu Leu Ala Cys Leu Leu Pro Ser Ser				
1048	1053	1058	1063	
gaa gaa gac tac agc tgc act cag gcc aac aac ttt gcc cgg tcc ttt				3688
Glu Glu Asp Tyr Ser Cys Thr Gln Ala Asn Asn Phe Ala Arg Ser Phe				
1064	1069	1074	1079	

tac ccc atg ctg agg tac acc aat ggg cca ccc ccc aca tag agggcat 3737  
 Tyr Pro Met Leu Arg Tyr Thr Asn Gly Pro Pro Pro Thr \*  
 1080 1085 1090

agctggccac agtgctacac caoctgcctg attgccaagg gtgcccagca cgtggcccca 3797  
 gaccaatctg agtgacttag tgttggcaag gtcccgggac ctgtgcagac ttcttctggg 3857  
 cttacacagc acgggctccc tggagcccag ggcagctttc agattgtgtt cctccccagg 3917  
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 gggatctctg gaaatgtcag tttcctgaag agccaagcac tttgtgaatt ctggtttgtt 4037  
 tgtaaaacag cattattata atgtaggtat ggtcaatgag cagtgggtgc catcacatat 4097  
 attatagaag caagcgagca cattccacc tagaaatggg tcagaaactc ataggcacc 4157  
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 tcttttatat tgctttaaat ttttaaagaa attatattgc atggatgtgg ttatttgtgc 4337  
 atatttttta acaatgccc atctgtatga ataatgtaaa cttcgatttt tttttaaaaa 4397  
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 tagggatgtt tttgtaagtt aattttctaa gactttttca catccaaagt gatgctttgc 4517  
 tttgggtttt aactgtttgg ccacggcggg ggtggggggc ggggggttgg acaaaaactt 4577  
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 aaaaaaaaaa a 4648

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 cgcgcccgcg ggccatgccc cactgactct aagtgggcac tgccccggct ccgggagggc 180  
 gagaccgagc gccggcc atg gga agc ttc cag ctg gaa gac ttt gcg gcg 230



Met Gly Ser Phe Gln Leu Glu Asp Phe Ala Ala  
1 5

ggc tgg atc gga ggt gca gcc agt gtc atc gtc ggc cac cct ctg gac Gly Trp Ile Gly Gly Ala Ala Ser Val Ile Val Gly His Pro Leu Asp 12 17 22 27	278
aca gtc aag act cgc ctg cag gct ggc gtt ggc tac gga aac acc ctc Thr Val Lys Thr Arg Leu Gln Ala Gly Val Gly Tyr Gly Asn Thr Leu 28 33 38 43	326
agc tgc atc cgc gtg gtg tac agg agg gag agt atg ttc ggc ttc ttc Ser Cys Ile Arg Val Val Tyr Arg Arg Glu Ser Met Phe Gly Phe Phe 44 49 54 59	374
aag ggc atg tcc ttc ccc ctc gcc agc att gcc gtc tac aac tcc gtg Lys Gly Met Ser Phe Pro Leu Ala Ser Ile Ala Val Tyr Asn Ser Val 60 65 70 75	422
gtg ttt ggg gtc ttc agt aac acg cag cgg ttc ctc agc cag cac cgc Val Phe Gly Val Phe Ser Asn Thr Gln Arg Phe Leu Ser Gln His Arg 76 81 86 91	470
tgc ggg gag cca gag gcc agt cct ccc cgc acg ctg tca gac ctg ctc Cys Gly Glu Pro Glu Ala Ser Pro Pro Arg Thr Leu Ser Asp Leu Leu 92 97 102 107	518
ctg gcc agc atg gtg gcc ggc gtg gtc tct gtc ggg ctg gga ggg ccc Leu Ala Ser Met Val Ala Gly Val Val Ser Val Gly Leu Gly Gly Pro 108 113 118 123	566
gtg gac ctc atc aag atc cgg ttg cag atg cag aca caa ccg ttt cgg Val Asp Leu Ile Lys Ile Arg Leu Gln Met Gln Thr Gln Pro Phe Arg 124 129 134 139	614
gac gcc aac ctc ggt ttg aag tcc agg gca gtg gct cct gca gag cag Asp Ala Asn Leu Gly Leu Lys Ser Arg Ala Val Ala Pro Ala Glu Gln 140 145 150 155	662
cca gca tac cag ggg cca gtg cac tgc att aca acc att gtg agg aat Pro Ala Tyr Gln Gly Pro Val His Cys Ile Thr Thr Ile Val Arg Asn 156 161 166 171	710
gag ggc ctg gcg ggg cta tac cgg ggg gcc agt gcc atg ctg ctg agg Glu Gly Leu Ala Gly Leu Tyr Arg Gly Ala Ser Ala Met Leu Leu Arg 172 177 182 187	758
gat gtc cca ggc tat tgc ctc tac ttc atc ccc tac gtg ttc ctg agt Asp Val Pro Gly Tyr Cys Leu Tyr Phe Ile Pro Tyr Val Phe Leu Ser 188 193 198 203	806
gag tgg atc aca cct gag gcc tgc aca ggc ccc agc ccc tgt gct gtg Glu Trp Ile Thr Pro Glu Ala Cys Thr Gly Pro Ser Pro Cys Ala Val 204 209 214 219	854
tgg ctg gcg ggc ggc atg gca gga gca att tct tgg ggg aca gcg act Trp Leu Ala Gly Gly Met Ala Gly Ala Ile Ser Trp Gly Thr Ala Thr	902

220	225	230	235	
cct atg gat gtc gtg aaa agt cga ctc caa gct gat ggg gtt tat tta				950
Pro Met Asp Val Val Lys Ser Arg Leu Gln Ala Asp Gly Val Tyr Leu				
236	241	246	251	
aac aaa tat aaa ggt gtc ctg gac tgt atc tcc cag agt tac cag aag				998
Asn Lys Tyr Lys Gly Val Leu Asp Cys Ile Ser Gln Ser Tyr Gln Lys				
252	257	262	267	
gaa ggt ctt aaa gtg ttt ttc aga ggc atc act gtg aac gcg gtg cgg				1046
Glu Gly Leu Lys Val Phe Phe Arg Gly Ile Thr Val Asn Ala Val Arg				
268	273	278	283	
ggc ttc ccc atg agt gcg gcc atg ttc ctt ggg tac gag ctg tcg ctg				1094
Gly Phe Pro Met Ser Ala Ala Met Phe Leu Gly Tyr Glu Leu Ser Leu				
284	289	294	299	
cag gct atc cgc ggg gac cac gca gtg acg agc cca taa gcgccaggtc				1143
Gln Ala Ile Arg Gly Asp His Ala Val Thr Ser Pro *				
300	305	310		
tttgctcagg ctgtcccctc tgccctgacat cctcttctcg ct				1185

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 <212> DNA  
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aagggtgacg cgagctctgc cctttaaccg gaaacgtctc cctgctcacc ccacccccgc	180
gcagacgcag tgctgagcac acagctaccg gacaaagagt gacgcccgga gctggagtt	239
atg gcg gct acg gag ccg atc ttg gcg gcc act ggg agt ccc gcg gcg	287
Met Ala Ala Thr Glu Pro Ile Leu Ala Ala Thr Gly Ser Pro Ala Ala	
1 5 10 15	
gtg cca ccg gag aaa ctg gaa gga gcc ggt tcg agc tca gcc cct gag	335
Val Pro Pro Glu Lys Leu Glu Gly Ala Gly Ser Ser Ser Ala Pro Glu	
17 22 27 32	

cgt aac tgt gtg ggc tcc tgc ctg cca gag gcc tca ccg cct gcc cct	383
Arg Asn Cys Val Gly Ser Ser Leu Pro Glu Ala Ser Pro Pro Ala Pro	
33 38 43 48	
 gag cct tcc agt ccc aac gcc gcg gtc cct gaa gcc atc cct acg ccc	431
Glu Pro Ser Ser Pro Asn Ala Ala Val Pro Glu Ala Ile Pro Thr Pro	
49 54 59 64	
 cga gct gcg gcc tcc gcg gcc ctg gag ctg cct ctc ggg ccc gca ccc	479
Arg Ala Ala Ala Ser Ala Ala Leu Glu Leu Pro Leu Gly Pro Ala Pro	
65 70 75 80	
 gtg agc gta gcg cct cag gcc gaa gct gaa gcg cgc tcc aca cca ggc	527
Val Ser Val Ala Pro Gln Ala Glu Ala Glu Ala Arg Ser Thr Pro Gly	
81 86 91 96	
 ccc gcc ggc tct aga ctc ggt ccc gag acg ttc cgc cag cgt ttc cgg	575
Pro Ala Gly Ser Arg Leu Gly Pro Glu Thr Phe Arg Gln Arg Phe Arg	
97 102 107 112	
 cag ttc cgc tac cag gat gcg gcg ggt ccc cgg gag gct ttc cgg cag	623
Gln Phe Arg Tyr Gln Asp Ala Ala Gly Pro Arg Glu Ala Phe Arg Gln	
113 118 123 128	
 ctg cgg gag ctg tcc cgc cag tgg ctg cgg cct gac atc cgc acc aag	671
Leu Arg Glu Leu Ser Arg Gln Trp Leu Arg Pro Asp Ile Arg Thr Lys	
129 134 139 144	
 gag cag atc gtg gag atg ctg gtg caa gag cag ctg ctc gcc atc ctg	719
Glu Gln Ile Val Glu Met Leu Val Gln Glu Gln Leu Leu Ala Ile Leu	
145 150 155 160	
 ccc gag gcg gct cgg gcc cgg cgg atc cgc cgc cgc acg gat gtg cgc	767
Pro Glu Ala Ala Arg Ala Arg Arg Ile Arg Arg Arg Thr Asp Val Arg	
161 166 171 176	
 atc act ggc tga gcg gtggagctgc gggcggccag ggccgggcgc tctgtgcgga	822
Ile Thr Gly *	
177	
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atgagttttg gcaaaaaaaaa aaaaa	907

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 <212> DNA  
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<220>  
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 <222> (35) .. (982)

<400> 467

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Gly Lys Lys Lys Ala Lys Ser Lys Glu Thr Ala Gly Leu Val Glu Gly		
7 12 17 22		
gag cgc acg ggc gcg ggc ggc ggg agc ctc tca gcg tcc cgg gct ccc		148
Glu Pro Thr Gly Ala Gly Gly Gly Ser Leu Ser Ala Ser Arg Ala Pro		
23 28 33 38		
gca cgc agg ctg gtc ttc cac gcg cag ctg gcg cac ggt agt gcc acg		196
Ala Arg Arg Leu Val Phe His Ala Gln Leu Ala His Gly Ser Ala Thr		
39 44 49 54		
ggc cga gtg gag ggc ttc tcc agc atc cag gag ctc tac gcc cag atc		244
Gly Arg Val Glu Gly Phe Ser Ser Ile Gln Glu Leu Tyr Ala Gln Ile		
55 60 65 70		
gcg ggc gcg ttt gaa atc tcg ccg tcg gag atc tta tat tgc act tta		292
Ala Gly Ala Phe Glu Ile Ser Pro Ser Glu Ile Leu Tyr Cys Thr Leu		
71 76 81 86		
aac aca cct aaa att gac atg gaa aga ctc tta gga gga caa cta gga		340
Asn Thr Pro Lys Ile Asp Met Glu Arg Leu Leu Gly Gly Gln Leu Gly		
87 92 97 102		
cta gaa gat ttc ata ttt gcc cat gtg aaa gga atc gaa aaa gaa gtg		388
Leu Glu Asp Phe Ile Phe Ala His Val Lys Gly Ile Glu Lys Glu Val		
103 108 113 118		
aat gtg tat aaa tct gag gat tca ctt ggt ctc acc att aca gat aat		436
Asn Val Tyr Lys Ser Glu Asp Ser Leu Gly Leu Thr Ile Thr Asp Asn		
119 124 129 134		
ggt gtt ggc tat gct ttt ata aag aga att aaa gat ggt ggt gtt att		484
Gly Val Gly Tyr Ala Phe Ile Lys Arg Ile Lys Asp Gly Gly Val Ile		
135 140 145 150		
gac tca gtt aaa aca atc tgt gtt ggg gat cat att gaa tcc ata aat		532
Asp Ser Val Lys Thr Ile Cys Val Gly Asp His Ile Glu Ser Ile Asn		
151 156 161 166		
gga gaa aat att gtt ggg tgg cgt cac tat gat gtt gct aag aag tta		580
Gly Glu Asn Ile Val Glu Trp Arg His Tyr Asp Val Ala Lys Lys Leu		
167 172 177 182		
aag gaa tta aaa aag gag gaa ctc ttt act atg aag tta ata gaa cct		628
Lys Glu Leu Lys Lys Glu Glu Leu Phe Thr Met Lys Leu Ile Glu Pro		
183 188 193 198		
aag aag gca ttt gaa ata gag ctg agg tca aag gct gga aag tca tca		676
Lys Lys Ala Phe Glu Ile Glu Leu Arg Ser Lys Ala Gly Lys Ser Ser		
199 204 209 214		
gga gaa aaa att ggt tgt gga agg gca aca ctt cgc ctg aga tca aaa		724

Gly	Glu	Lys	Ile	Gly	Cys	Gly	Arg	Ala	Thr	Leu	Arg	Leu	Arg	Ser	Lys	
215					220					225					230	
ggt	cct	gcc	acc	gtg	gaa	gaa	atg	cct	tct	gaa	acc	aaa	gca	aag	gca	772
Gly	Pro	Ala	Thr	Val	Glu	Glu	Met	Pro	Ser	Glu	Thr	Lys	Ala	Lys	Ala	
231					236					241					246	
att	gaa	aag	att	gat	gat	gtt	ctt	gag	ttg	tac	atg	gga	att	cga	gat	820
Ile	Glu	Lys	Ile	Asp	Asp	Val	Leu	Glu	Leu	Tyr	Met	Gly	Ile	Arg	Asp	
247					252					257					262	
att	gat	tta	gcc	acc	aca	atg	ttt	gaa	gct	gga	aag	gac	aaa	gta	aat	868
Ile	Asp	Leu	Ala	Thr	Thr	Met	Phe	Glu	Ala	Gly	Lys	Asp	Lys	Val	Asn	
263					268					273					278	
cca	gat	gaa	ttt	gct	gtg	gca	ctt	gac	gaa	act	ctt	gga	gac	ttt	gcg	916
Pro	Asp	Glu	Phe	Ala	Val	Ala	Leu	Asp	Glu	Thr	Leu	Gly	Asp	Phe	Ala	
279					284					289					294	
ttc	cca	gac	gaa	ttt	gtc	ttt	gat	gtt	tgg	gga	gtc	att	ggg	gat	gcc	964
Phe	Pro	Asp	Glu	Phe	Val	Phe	Asp	Val	Trp	Gly	Val	Ile	Gly	Asp	Ala	
295					300					305					310	
aaa	cga	aga	gga	tta	tga	tgtgta	cactccatct	ctgaagaaac	aacccatcgt							1018
Lys	Arg	Arg	Gly	Leu	*											
311					316											
tctttttttt	tctctttttt	aaaaagtcct	ataagatctg	tttttggaca	cctttactaa											1078
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aagtaggaag cggaggggga gcagggtttgc ggggccaaagt gttgcggcga cgcacctcac	180
gtcgagaatc gggaggagga gactgcaagg ataggcccag gagta atg gag tcc	234
	Met Glu Ser
	1
aaa gag gaa cga gcg tta aac aat ctc atc gtg gaa aat gtc aac cag	282
Lys Glu Glu Arg Ala Leu Asn Asn Leu Ile Val Glu Asn Val Asn Gln	
4 9 14 19	

gaa aat gat gaa aaa gat gaa aag gag caa gtt gct aat aaa ggg gag	330
Glu Asn Asp Glu Lys Asp Glu Lys Glu Gln Val Ala Asn Lys Gly Glu	
20 25 30 35	
ccc ttg gcc cta cct ttg aat gtt agt gaa tac tgt gtg cct aga gga	378
Pro Leu Ala Leu Pro Leu Asn Val Ser Glu Tyr Cys Val Pro Arg Gly	
36 41 46 51	
aac cgt agg cgg ttc cgc gtt agg cag ccc atc ctg cag tat aga tgg	426
Asn Arg Arg Arg Phe Arg Val Arg Gln Pro Ile Leu Gln Tyr Arg Trp	
52 57 62 67	
gac ata atg cat agg ctt gga gag cca cag gca agg atg aga gag gag	474
Asp Ile Met His Arg Leu Gly Glu Pro Gln Ala Arg Met Arg Glu Glu	
68 73 78 83	
aat atg gaa agg att ggg gag gag gtg aga cag ctg atg gaa aag ctg	522
Asn Met Glu Arg Ile Gly Glu Glu Val Arg Gln Leu Met Glu Lys Leu	
84 89 94 99	
agg gaa aag cag ttg agt cat agt ttg cgg gca gtc agc act gat ccc	570
Arg Glu Lys Gln Leu Ser His Ser Leu Arg Ala Val Ser Thr Asp Pro	
100 105 110 115	
cct cac cat gac cat cac gat gag ttt tgc ctt atg ccc tga atcctga	619
Pro His His Asp His His Asp Glu Phe Cys Leu Met Pro *	
116 121 126	
tggtttccct gaagttaata gggagaccoc tgcttcctaa acttacacat ttgtggtgta	679
cctttgtcgt aaacgttttg atgttaacct tttcttggtg gtctcctatt accagcttct	739
aaatgaatgt tgtttttgac ccagtttgta agtttctgtc agcaggagag ttttacctat	799
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aaa	862

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<220>  
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aotggaaaat ctcccaaaca atttctgatt gattgggtca ggaagaatct tcccaagagt	180

ccaaatcctt cctttgaaaa agttccagta ggtagatact ggaaatgtag ggtagggta	240
atcaagtctg aagatgatgt cctggtagta tgcctacaa tcttaacaga agatggcatg	300
caagctcagc acctgggagc tacttttagcc ctttaccgtt tagttaaagg gcagtcagtt	360
catcagttac ttctctccac ttaccgagat gtttggtcgg agtggagtga tgcagaaaaag	420
aaaaggaag aattaaataa a atg gaa acc aat aaa cca cgt gat ctt ttt	471
Met Glu Thr Asn Lys Pro Arg Asp Leu Phe	
1 5	
att gcc aaa ctt ctg aat aaa ctg aaa cag cag caa cag cag caa caa	519
Ile Ala Lys Leu Leu Asn Lys Leu Lys Gln Gln Gln Gln Gln Gln Gln	
11 16 21 26	
cag cat tct gaa aat aag aga gaa aac tct gaa gat ccc gag gaa tct	567
Gln His Ser Glu Asn Lys Arg Glu Asn Ser Glu Asp Pro Glu Glu Ser	
27 32 37 42	
tgg gaa aat tta gtt tgc gat gag gat ttt tct gca ctg tcc ttg gaa	615
Trp Glu Asn Leu Val Ser Asp Glu Asp Phe Ser Ala Leu Ser Leu Glu	
43 48 53 58	
tca gca aat gtg gaa gat ttg gaa cct gtt aga aac ctc ttt aga aag	663
Ser Ala Asn Val Glu Asp Leu Glu Pro Val Arg Asn Leu Phe Arg Lys	
59 64 69 74	
ttg caa agc aca cct aag tat cag aaa ctt cta aag gaa aga caa cag	711
Leu Gln Ser Thr Pro Lys Tyr Gln Lys Leu Leu Lys Glu Arg Gln Gln	
75 80 85 90	
cta cct gta ttt aaa cat cgg gac tca att gtt gaa act ctt aaa agg	759
Leu Pro Val Phe Lys His Arg Asp Ser Ile Val Glu Thr Leu Lys Arg	
91 96 101 106	
cat cgg gta gtg gtt gtg gca ggt gaa aca ggg agt ggt aaa agt act	807
His Arg Val Val Val Val Ala Gly Glu Thr Gly Ser Gly Lys Ser Thr	
107 112 117 122	
cag gta cca cat ttt cta ttg gaa gat ttg ctt cta aat gag tgg gaa	855
Gln Val Pro His Phe Leu Leu Glu Asp Leu Leu Leu Asn Glu Trp Glu	
123 128 133 138	
gca agt aaa tgt aac att gtc tgt acc caa ccc cga aga atc tca gca	903
Ala Ser Lys Cys Asn Ile Val Cys Thr Gln Pro Arg Arg Ile Ser Ala	
139 144 149 154	
gtt agt tta gcc aac aga gta tgt gat gaa ttg ggc tgt gaa aat gga	951
Val Ser Leu Ala Asn Arg Val Cys Asp Glu Leu Gly Cys Glu Asn Gly	
155 160 165 170	
cct gga gga agg aat tcc ttg tgt gga tat cag atc cgg atg gaa tct	999
Pro Gly Gly Arg Asn Ser Leu Cys Gly Tyr Gln Ile Arg Met Glu Ser	
171 176 181 186	

cga gct tgt gaa tct acc agg tta ctc tat tgt aca aca ggg gtt ttg	1047
Arg Ala Cys Glu Ser Thr Arg Leu Leu Tyr Cys Thr Thr Gly Val Leu	
187 192 197 202	
cta agg aaa ctt caa gaa gat ggt ctt cta agt aat gtg tct cat gtt	1095
Leu Arg Lys Leu Gln Glu Asp Gly Leu Leu Ser Asn Val Ser His Val	
203 208 213 218	
att gta gat gag gtt cat gaa aga agt gtc cag tca gac ttc cta cta	1143
Ile Val Asp Glu Val His Glu Arg Ser Val Gln Ser Asp Phe Leu Leu	
219 224 229 234	
att atc ttg aag gaa att tta cag aaa cgt tct gat cta cac ttg att	1191
Ile Ile Leu Lys Glu Ile Leu Gln Lys Arg Ser Asp Leu His Leu Ile	
235 240 245 250	
cta atg agt gcc act gtg gac agc gaa aaa ttt tct aca tat ttc aca	1239
Leu Met Ser Ala Thr Val Asp Ser Glu Lys Phe Ser Thr Tyr Phe Thr	
251 256 261 266	
cac tgc ccc att ctc aga att tca gga aga agt tat cct gtt gag gtt	1287
His Cys Pro Ile Leu Arg Ile Ser Gly Arg Ser Tyr Pro Val Glu Val	
267 272 277 282	
ttt cat ctt gaa gat ata ata gaa gaa aca ggc ttt gta ctg gaa aaa	1335
Phe His Leu Glu Asp Ile Ile Glu Glu Thr Gly Phe Val Leu Glu Lys	
283 288 293 298	
gac tca gaa tat tgt cag aaa ttt ctg gaa gag gaa gaa gaa gta acc	1383
Asp Ser Glu Tyr Cys Gln Lys Phe Leu Glu Glu Glu Glu Val Thr	
299 304 309 314	
att aat gtt aca agc aaa gca ggg gga ata aaa aaa tat cag gaa tac	1431
Ile Asn Val Thr Ser Lys Ala Gly Gly Ile Lys Lys Tyr Gln Glu Tyr	
315 320 325 330	
atc cca gtt cag act gga gca cat gct gat tta aat cca ttt tac caa	1479
Ile Pro Val Gln Thr Gly Ala His Ala Asp Leu Asn Pro Phe Tyr Gln	
331 336 341 346	
aag tac agc agc cgc act cag cat gct att cta tac atg aat cct cat	1527
Lys Tyr Ser Ser Arg Thr Gln His Ala Ile Leu Tyr Met Asn Pro His	
347 352 357 362	
aaa atc aac ctg gat ctc att ttg gaa ctt ctt gca tac tta gat aaa	1575
Lys Ile Asn Leu Asp Leu Ile Leu Glu Leu Leu Ala Tyr Leu Asp Lys	
363 368 373 378	
agt ccc caa ttc aga aat att gaa gga gca gta ttg atc ttt tta cca	1623
Ser Pro Gln Phe Arg Asn Ile Glu Gly Ala Val Leu Ile Phe Leu Pro	
379 384 389 394	
gga ctt gct cat att cag cag ttg tat gat ctt cta tca aat gat aga	1671
Gly Leu Ala His Ile Gln Gln Leu Tyr Asp Leu Leu Ser Asn Asp Arg	
395 400 405 410	
aga ttt tat tct gaa cga tat aaa gtg ata gct ctg cat tct att ctt	1719



Arg Phe Tyr Ser Glu	Arg Tyr Lys Val Ile	Ala Leu His Ser Ile Leu	
411	416	421	426
tca acc caa gat caa gct gca gca ttc aca ctt ccc cct cca gga gtc			1767
Ser Thr Gln Asp Gln Ala Ala Ala Phe Thr Leu Pro Pro Pro Gly Val			
427	432	437	442
agg aag att gtt tta gca acc aat att gca gag acg ggt atc act att			1815
Arg Lys Ile Val Leu Ala Thr Asn Ile Ala Glu Thr Gly Ile Thr Ile			
443	448	453	458
cct gat gtt gta ttt gta att gat act gga aga aca aaa gaa aat aag			1863
Pro Asp Val Val Phe Val Ile Asp Thr Gly Arg Thr Lys Glu Asn Lys			
459	464	469	474
tac cat gaa agc agt cag atg agt tct ttg gtg gag acg ttt gtc agt			1911
Tyr His Glu Ser Ser Gln Met Ser Ser Leu Val Glu Thr Phe Val Ser			
475	480	485	490
aaa gcc agt gct ttg cag cgc cag gga aga gct ggg cgg gtc aga gat			1959
Lys Ala Ser Ala Leu Gln Arg Gln Gly Arg Ala Gly Arg Val Arg Asp			
491	496	501	506
ggc ttc tgt ttc cga atg tac aca aga gaa aga ttt gaa ggc ttt atg			2007
Gly Phe Cys Phe Arg Met Tyr Thr Arg Glu Arg Phe Glu Gly Phe Met			
507	512	517	522
gat tat tct gtt cct gaa atc tta cgt gta cct ttg gag gaa tta tgc			2055
Asp Tyr Ser Val Pro Glu Ile Leu Arg Val Pro Leu Glu Glu Leu Cys			
523	528	533	538
ctt cat att atg aaa tgt aat ctt ggt tct cct gaa gat ttc ctc tcc			2103
Leu His Ile Met Lys Cys Asn Leu Gly Ser Pro Glu Asp Phe Leu Ser			
539	544	549	554
aaa gcc tta gat cct cct cag ctc caa gtg atc agc aat gca atg aat			2151
Lys Ala Leu Asp Pro Pro Gln Leu Gln Val Ile Ser Asn Ala Met Asn			
555	560	565	570
ttg ctc cga aaa att gga gct tgt gaa tta aat gag cct aaa ctg act			2199
Leu Leu Arg Lys Ile Gly Ala Cys Glu Leu Asn Glu Pro Lys Leu Thr			
571	576	581	586
cag ttg ggc caa cac ctt gca gct tta cct gtg aat gtc aag att ggc			2247
Pro Leu Gly Gln His Leu Ala Ala Leu Pro Val Asn Val Lys Ile Gly			
587	592	597	602
aag atg ctt att ttt ggt gcc ata ttt ggc tgc ctt gac cca gtg gca			2295
Lys Met Leu Ile Phe Gly Ala Ile Phe Gly Cys Leu Asp Pro Val Ala			
603	608	613	618
aca cta gct gca gtt atg aca gag aag tct cct ttt acc aca cca att			2343
Thr Leu Ala Ala Val Met Thr Glu Lys Ser Pro Phe Thr Thr Pro Ile			
619	624	629	634
ggt cga aaa gat gaa gca gat ctt gca aaa tca gct ttg gcc atg gcg			2391
Gly Arg Lys Asp Glu Ala Asp Leu Ala Lys Ser Ala Leu Ala Met Ala			

635	640	645	650	
gat tca gac cac ctg acg atc tac aat gca tat cta gga tgg aag aaa				2439
Asp Ser Asp His Leu Thr Ile Tyr Asn Ala Tyr Leu Gly Trp Lys Lys				
651	656	661	666	
gca cga caa gaa gga ggt tat cgt tct gaa atc aca tac tgc cgg agg				2487
Ala Arg Gln Glu Gly Gly Tyr Arg Ser Glu Ile Thr Tyr Cys Arg Arg				
667	672	677	682	
aac ttt ctt aat aga aca tca ctg tta acc cta gag gat gta aag cag				2535
Asn Phe Leu Asn Arg Thr Ser Leu Leu Thr Leu Glu Asp Val Lys Gln				
683	688	693	698	
gag tta ata aag ttg gtt aag gca gca gga ttt tca tct tcc aca act				2583
Glu Leu Ile Lys Leu Val Lys Ala Ala Gly Phe Ser Ser Ser Thr Thr				
699	704	709	714	
tct acc agc tgg gaa gga aac aga gcc tca cag acc ctc tca ttc caa				2631
Ser Thr Ser Trp Glu Gly Asn Arg Ala Ser Gln Thr Leu Ser Phe Gln				
715	720	725	730	
gaa att gcc ctt ctt aaa gct gta ctg gtg gct gga ctg tat gac aat				2679
Glu Ile Ala Leu Leu Lys Ala Val Leu Val Ala Gly Leu Tyr Asp Asn				
731	736	741	746	
gtg ggg aag ata atc tat aca aag tca gtg gat gtt aca gaa aaa ttg				2727
Val Gly Lys Ile Ile Tyr Thr Lys Ser Val Asp Val Thr Glu Lys Leu				
747	752	757	762	
gct tgc att gtg gag acg gcc caa ggc aaa gca caa gta cac cca tcc				2775
Ala Cys Ile Val Glu Thr Ala Gln Gly Lys Ala Gln Val His Pro Ser				
763	768	773	778	
tca gta aat cga gat ttg caa act cat gga tgg ctc tta tac cag gag				2823
Ser Val Asn Arg Asp Leu Gln Thr His Gly Trp Leu Leu Tyr Gln Glu				
779	784	789	794	
aag ata agg tat gcc aga gtg tat ttg aga gaa act acc cta ata acc				2871
Lys Ile Arg Tyr Ala Arg Val Tyr Leu Arg Glu Thr Thr Leu Ile Thr				
795	800	805	810	
cct ttt cca gtt tta ctt ttt ggt ggt gat ata gaa gtt cag cac cga				2919
Pro Phe Pro Val Leu Leu Phe Gly Gly Asp Ile Glu Val Gln His Arg				
811	816	821	826	
gaa cgt ctt ctt tct att gat ggc tgg atc tat ttt cag gcc cct gta				2967
Glu Arg Leu Leu Ser Ile Asp Gly Trp Ile Tyr Phe Gln Ala Pro Val				
827	832	837	842	
aag ata gct gtc att ttc aag cag ctg aga gtt ctc att gat tca gtt				3015
Lys Ile Ala Val Ile Phe Lys Gln Leu Arg Val Leu Ile Asp Ser Val				
843	848	853	858	
tta aga aaa aag ctt gaa aat cca aag atg tcc ctt gaa aat gac aag				3063
Leu Arg Lys Lys Leu Glu Asn Pro Lys Met Ser Leu Glu Asn Asp Lys				
859	864	869	874	

att ctg cag atc att acg gaa ttg ata aaa aca gag aat aac tga aac 3111  
 Ile Leu Gln Ile Ile Thr Glu Leu Ile Lys Thr Glu Asn Asn \*  
 875 880 885

tgaaattcat ggtcaactgc tttaaaaatt aagatgaaga tacagtcacg aaattatctg 3171  
 aaaatggggtc atcacattaa gtatttcatt acttaaaatg ttggtactag ccattaactt 3231  
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 gagc atg agc ggg cag cgc gtg gac gtc aag gtg gtg atg ctg ggc aag 169  
 Met Ser Gly Gln Arg Val Asp Val Lys Val Val Met Leu Gly Lys  
 1 5 10  
 gag tac gtg ggc aag act agc ctg gtg gag cgc tac gtg cac gac cgc 217  
 Glu Tyr Val Gly Lys Thr Ser Leu Val Glu Arg Tyr Val His Asp Arg  
 16 21 26 31  
 ttt ctg gtg ggg cct tat cag aac acc atc ggg gcc gcc ttc gtg gcc 265  
 Phe Leu Val Gly Pro Tyr Gln Asn Thr Ile Gly Ala Ala Phe Val Ala  
 32 37 42 47  
 aag gtg atg tcg gtc gga gac cgg act gtg aca tta ggt att tgg gac 313  
 Lys Val Met Ser Val Gly Asp Arg Thr Val Thr Leu Gly Ile Trp Asp  
 48 53 58 63  
 aca gca ggc tct gag cgc tat gag gcc atg agt aga atc tac tat cgg 361  
 Thr Ala Gly Ser Glu Arg Tyr Glu Ala Met Ser Arg Ile Tyr Tyr Arg  
 64 69 74 79  
 ggt gcc aag gct gcc atc gtc tgc tat gac ctc aca gac agc agc agc 409  
 Gly Ala Lys Ala Ala Ile Val Cys Tyr Asp Leu Thr Asp Ser/Ser Ser  
 80 85 90 95  
 ttt gag cga gca aag ttc tgg gtg aag gaa ctg cgc agc cta gag gag 457

Phe	Glu	Arg	Ala	Lys	Phe	Trp	Val	Lys	Glu	Leu	Arg	Ser	Leu	Glu	Glu	
96					101					106					111	
ggc	tgc	caa	atc	tac	tta	tgt	ggc	acc	aag	agt	gac	ctg	ctg	gaa	gaa	505
Gly	Cys	Gln	Ile	Tyr	Leu	Cys	Gly	Thr	Lys	Ser	Asp	Leu	Leu	Glu	Glu	
112					117					122					127	
gac	cgg	agg	cgt	cga	cgt	gtg	gac	ttc	cac	gac	gtc	cag	gac	tat	gca	553
Asp	Arg	Arg	Arg	Arg	Arg	Val	Asp	Phe	His	Asp	Val	Gln	Asp	Tyr	Ala	
128					133					138					143	
gac	aat	atc	aaa	gct	cag	ctc	ttt	gaa	aca	tcc	agc	aag	aca	ggc	cag	601
Asp	Asn	Ile	Lys	Ala	Gln	Leu	Phe	Glu	Thr	Ser	Ser	Lys	Thr	Gly	Gln	
144					149					154					159	
agt	gtg	gac	gag	ctc	ttc	cag	aaa	gtg	gca	gag	gat	tac	gtc	agt	gtg	649
Ser	Val	Asp	Glu	Leu	Phe	Gln	Lys	Val	Ala	Glu	Asp	Tyr	Val	Ser	Val	
160					165					170					175	
gct	gcc	ttc	cag	gtg	atg	aca	gag	gac	aag	ggc	gtg	gat	ctg	ggc	cag	697
Ala	Ala	Phe	Gln	Val	Met	Thr	Glu	Asp	Lys	Gly	Val	Asp	Leu	Gly	Gln	
176					181					186					191	
aag	cca	aac	ccc	tac	ttc	tac	agc	tgt	tgt	cat	cac	tga	gtcagcactc			746
Lys	Pro	Asn	Pro	Tyr	Phe	Tyr	Ser	Cys	Cys	His	His	*				
192					197					202						
acctggcctg	ggggaattaa	aggaattccc	cgtaagggt	ggaccagct	cctttctggg											806
cttgggtagt	caaattgtctg	agctacccca	ggctctcatg	tcagcagagt	ggcgcctgcc											866
tgtgctggcc	catggaacgg	agacagcatt	gggctgactg	tgggcatgag	gagggataag											926
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ggctgaggcg	gc	atg	gat	ctc	agc	gag	ctg	gag	aga	gac	aat	aca	ggc	168		
		Met	Asp	Leu	Ser	Glu	Leu	Glu	Arg	Asp	Asn	Thr	Gly			
		1				5						10				
cgc	tgt	cgc	ctg	agt	tcg	cct	gtg	ccc	gcg	gtg	tgc	cgc	aag	gag	cct	216

Arg	Cys	Arg	Leu	Ser	Ser	Pro	Val	Pro	Ala	Val	Cys	Arg	Lys	Glu	Pro	
13					18					23					28	
tgc	gtc	ctg	ggc	gtc	gat	gag	gcg	ggc	agg	ggc	ccc	gtg	ctg	ggc	ccc	264
Cys	Val	Leu	Gly	Val	Asp	Glu	Ala	Gly	Arg	Gly	Pro	Val	Leu	Gly	Pro	
29					34					39					44	
atg	gtc	tac	gcc	atc	tgt	tat	tgt	ccc	ctg	cct	cgc	ctg	gca	gat	ctg	312
Met	Val	Tyr	Ala	Ile	Cys	Tyr	Cys	Pro	Leu	Pro	Arg	Leu	Ala	Asp	Leu	
45					50					55					60	
gag	gcg	ctg	aaa	gtg	gca	gac	tca	aag	acc	cta	ttg	gag	agc	gag	cgg	360
Glu	Ala	Leu	Lys	Val	Ala	Asp	Ser	Lys	Thr	Leu	Leu	Glu	Ser	Glu	Arg	
61					66					71					76	
gaa	agg	ctg	ttt	gcg	aaa	atg	gag	gac	acg	gac	ttt	gtc	ggc	tgg	gcg	408
Glu	Arg	Leu	Phe	Ala	Lys	Met	Glu	Asp	Thr	Asp	Phe	Val	Gly	Trp	Ala	
77					82					87					92	
ctg	gat	gtg	ctg	tct	cca	aac	ctc	atc	tct	acc	agc	atg	ctt	ggg	cgg	456
Leu	Asp	Val	Leu	Ser	Pro	Asn	Leu	Ile	Ser	Thr	Ser	Met	Leu	Gly	Arg	
93					98					103					108	
gtc	aaa	tac	aac	ctg	aac	tcc	ctg	tca	cat	gat	aca	gcc	act	ggg	ctt	504
Val	Lys	Tyr	Asn	Leu	Asn	Ser	Leu	Ser	His	Asp	Thr	Ala	Thr	Gly	Leu	
109					114					119					124	
ata	cag	tat	gca	ttg	gac	cag	ggc	gtg	aac	gtc	acc	cag	gta	ttc	gtg	552
Ile	Gln	Tyr	Ala	Leu	Asp	Gln	Gly	Val	Asn	Val	Thr	Gln	Val	Phe	Val	
125					130					135					140	
gac	acc	gta	ggg	atg	cca	gag	aca	tac	cag	gcg	cgg	ctg	cag	caa	agt	600
Asp	Thr	Val	Gly	Met	Pro	Glu	Thr	Tyr	Gln	Ala	Arg	Leu	Gln	Gln	Ser	
141					146					151					156	
ttt	ccc	ggg	att	gag	gtg	acg	gtc	aag	gcc	aaa	gca	gat	gcc	ctc	tac	648
Phe	Pro	Gly	Ile	Glu	Val	Thr	Val	Lys	Ala	Lys	Ala	Asp	Ala	Leu	Tyr	
157					162					167					172	
ccg	gtg	gtt	agt	gct	gcc	agc	atc	tgt	gcc	aag	gtg	gcc	cgg	gac	cag	696
Pro	Val	Val	Ser	Ala	Ala	Ser	Ile	Cys	Ala	Lys	Val	Ala	Arg	Asp	Gln	
173					178					183					188	
gcc	gtg	aag	aaa	tgg	cag	ttc	gtg	gag	aaa	ctg	cag	gac	ttg	gat	act	744
Ala	Val	Lys	Lys	Trp	Gln	Phe	Val	Glu	Lys	Leu	Gln	Asp	Leu	Asp	Thr	
189					194					199					204	
gat	tat	ggc	tca	ggc	tac	ccc	aat	gat	ccc	aag	aca	aaa	gcg	tgg	ttg	792
Asp	Tyr	Gly	Ser	Gly	Tyr	Pro	Asn	Asp	Pro	Lys	Thr	Lys	Ala	Trp	Leu	
205					210					215					220	
aag	gag	cac	gtg	gag	cct	gtg	ttc	ggc	ttc	ccc	cag	ttt	gtc	cgg	ttc	840
Lys	Glu	His	Val	Glu	Pro	Val	Phe	Gly	Phe	Pro	Gln	Phe	Val	Arg	Phe	
221					226					231					236	
agc	tgg	cgc	acg	gcc	cag	acc	atc	ctg	gag	aaa	gag	gcg	gaa	gat	gtt	888
Ser	Trp	Arg	Thr	Ala	Gln	Thr	Ile	Leu	Glu	Lys	Glu	Ala	Glu	Asp	Val	

237	242	247	252	
ata tgg gag gac tca gca tcc gag aat cag gag gga ctc agg aag atc				936
Ile Trp Glu Asp Ser Ala Ser Glu Asn Gln Glu Gly Leu Arg Lys Ile				
253	258	263	268	
aca tcc tac ttc ctc aat gaa ggg tcc caa gcc cgt ccc cgt tct tcc				984
Thr Ser Tyr Phe Leu Asn Glu Gly Ser Gln Ala Arg Pro Arg Ser Ser				
269	274	279	284	
cac cga tat ttc ctg gaa cgc ggc ctg gag tca gca acc agc ctc tag				1032
His Arg Tyr Phe Leu Glu Arg Gly Leu Glu Ser Ala Thr Ser Leu *				
285	290	295	300	
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atg gct cac gtc gcc tcc cgc aag cgc	110
Met Ala His Val Gly Ser Arg Lys Arg	
1 5	
tcg agg agt cgc agc cgg tcc cgg gga cgg ggg tcg gaa aag aga aag	158
Ser Arg Ser Arg Ser Arg Ser Arg Gly Arg Gly Ser Glu Lys Arg Lys	
10 15 20 25	
aag aag agc agg aaa gac acc tcg agg aac tgc tcg gcc tcc aca tcc	206
Lys Lys Ser Arg Lys Asp Thr Ser Arg Asn Cys Ser Ala Ser Thr Ser	
26 31 36 41	
caa ggt cgc aag gcc agc acg gcc cct ggg gcg gag gag aga agc aag	254
Gln Gly Arg Lys Ala Ser Thr Ala Pro Gly Ala Glu Glu Arg Ser Lys	
42 47 52 57	
cag aag gcc cgg agg aga aca aga tcc agc tcc tcc tcc tct tct tcc	302
Gln Lys Ala Arg Arg Arg Thr Arg Ser Ser Ser Ser Ser Ser Ser Ser	
58 63 68 73	
agt tct tct agc tcc tct tct tcc tcc tcg tcc tcc tcc tct tcc tcc	350
Ser Ser Ser Ser Ser Ser Ser Ser Ser Ser Ser Ser Ser Ser Ser	
74 79 84 89	

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Ser Asp Gly Arg Lys Lys Arg Gly Lys Tyr Lys Asp Lys Arg Arg Lys	
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aag aag aag aag agg aag aag ctg aag aag aag ggc aag gag aag gcg	446
Lys Lys Lys Lys Arg Lys Lys Leu Lys Lys Lys Gly Lys Glu Lys Ala	
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Glu Ala Gln Gln Val Glu Ala Leu Pro Gly Pro Ser Leu Asp Gln Trp	
122 127 132 137	
cac cga tca gct ggg gag gaa gag gat ggc cca gtc ctg acg gat gag	542
His Arg Ser Ala Gly Glu Glu Glu Asp Gly Pro Val <sup>1</sup> Leu Thr Asp Glu	
138 143 148 153	
cag aag tcc cga atc cag gcc atg aag ccc atg acc aag gag gag tgg	590
Gln Lys Ser Arg Ile Gln Ala Met Lys Pro Met Thr Lys Glu Glu Trp	
154 159 164 169	
gat gcc cgg cag agc atc atc cgc aag gtg gtg gac cct gag acg ggg	638
Asp Ala Arg Gln Ser Ile Ile Arg Lys Val Val Asp Pro Glu Thr Gly	
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Arg Thr Arg Leu Ile Lys Gly Asp Gly Glu Val Leu Glu Glu Ile Val	
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Thr Lys Glu Arg His Arg Glu Ile Asn Lys Val Gly Val Ala Pro Leu	
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 Ile Ser Ala Thr Asp Thr Ile Arg Lys Met Lys Asn Asp Phe Arg Lys  
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 Met Glu Asp Glu Met Asp Arg Leu Ala Thr Asn Met Ala Val Ile Thr  
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 Asp Phe Ser Ala Arg Ile Ser Ala Thr Leu Gln Asp Arg His Glu Arg  
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 Ile Thr Lys Leu Ala Gly Val His Ala Leu Leu Arg Lys Leu Gln Phe  
 61                                  66                                  71                                  76  
 ctc ttt gag ctg ccc tcg cgc ctc acc aag tgc gtg gaa ctg ggc gcc 531  
 Leu Phe Glu Leu Pro Ser Arg Leu Thr Lys Cys Val Glu Leu Gly Ala  
 77                                  82                                  87                                  92  
 tat ggg cag gcg gtg cgc tac cag ggc cgc gcg cag gcc gtg ctg cag 579  
 Tyr Gly Gln Ala Val Arg Tyr Gln Gly Arg Ala Gln Ala Val Leu Gln  
 93                                  98                                  103                                  108  
 cag tac caa cac ctg ccc tcg ttc cgc gcc atc cag gac gac tgc cag 627  
 Gln Tyr Gln His Leu Pro Ser Phe Arg Ala Ile Gln Asp Asp Cys Gln  
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 Val Ile Thr Ala Arg Leu Ala Gln Gln Leu Arg Gln Arg Phe Arg Glu  
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 ggc ggc tca ggc gcc ccg gag cag gca gag tgc gtg gag ctg ctg ctg 723  
 Gly Gly Ser Gly Ala Pro Glu Gln Ala Glu Cys Val Glu Leu Leu Leu  
 141                                  146                                  151                                  156



gcc ctg ggc gag cct gcg gag gag ctg tgc gag gag ttc ctg gcg cac	771
Ala Leu Gly Glu Pro Ala Glu Glu Leu Cys Glu Glu Phe Leu Ala His	
157 162 167 172	
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Ala Arg Gly Arg Leu Glu Lys Glu Leu Arg Asn Leu Glu Ala Glu Leu	
173 178 183 188	
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Gly Pro Ser Pro Pro Ala Pro Asp Val Leu Glu Phe Thr Asp His Gly	
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Gly Ser Gly Phe Val Gly Gly Leu Cys Gln Val Ala Ala Ala Tyr Gln	
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Glu Leu Phe Ala Ala Gln Gly Pro Ala Gly Ala Glu Lys Leu Ala Ala	
221 226 231 236	
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Phe Ala Arg Gln Leu Gly Ser Arg Tyr Phe Ala Leu Val Glu Arg Arg	
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Gly Cys Leu Thr Asp Val Arg Gln Ala Leu Ala Ala Pro Arg Val Ala	
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Gly Lys Glu Gly Pro Gly Leu Ala Glu Leu Leu Ala Asn Val Ala Ser	
333 338 343 348	
tcc atc ctg agc cac att aag gcc tct ctg gca gca gtg cac ctt ttc	1347
Ser Ile Leu Ser His Ile Lys Ala Ser Leu Ala Ala Val His Leu Phe	
349 354 359 364	
acc gcc aaa gag gtg tcc ttc tcc aac aag ccc tac ttc cgg ggt gag	1395
Thr Ala Lys Glu Val Ser Phe Ser Asn Lys Pro Tyr Phe Arg Gly Glu	
365 370 375 380	
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Phe	Cys	Ser	Gln	Gly	Val	Arg	Glu	Gly	Leu	Ile	Val	Gly	Phe	Val	His	
381					386					391					396	
tct	atg	tgc	cag	acg	gct	cag	agc	ttc	tgc	gac	agc	cct	ggg	gag	aag	1491
Ser	Met	Cys	Gln	Thr	Ala	Gln	Ser	Phe	Cys	Asp	Ser	Pro	Gly	Glu	Lys	
397					402					407					412	
ggg	ggt	gcc	aca	cca	cct	gcc	ctg	ctc	ctg	ctg	ctc	tcc	cgc	ctc	tgc	1539
Gly	Gly	Ala	Thr	Pro	Pro	Ala	Leu	Leu	Leu	Leu	Leu	Ser	Arg	Leu	Cys	
413					418					423					428	
ctg	gac	tac	gag	acg	gcc	acc	atc	tcc	tac	atc	ctc	act	ctc	act	gat	1587
Leu	Asp	Tyr	Glu	Thr	Ala	Thr	Ile	Ser	Tyr	Ile	Leu	Thr	Leu	Thr	Asp	
429					434					439					444	
gaa	cag	ttt	ctg	gtg	cag	gat	cag	ttc	cca	gtg	acg	ccc	gtg	agc	acg	1635
Glu	Gln	Phe	Leu	Val	Gln	Asp	Gln	Phe	Pro	Val	Thr	Pro	Val	Ser	Thr	
445					450					455					460	
ctg	tgt	gca	gag	gcc	agg	gaa	acg	gcg	cgg	cgg	ctg	ctg	acc	cac	tac	1683
Leu	Cys	Ala	Glu	Ala	Arg	Glu	Thr	Ala	Arg	Arg	Leu	Leu	Thr	His	Tyr	
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gtg	aag	gtg	cag	ggc	ctg	gtc	ata	tca	cag	atg	ctg	cgc	aag	agc	gtg	1731
Val	Lys	Val	Gln	Gly	Leu	Val	Ile	Ser	Gln	Met	Leu	Arg	Lys	Ser	Val	
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Glu	Thr	Arg	Asp	Trp	Leu	Ser	Thr	Leu	Glu	Pro	Arg	Asn	Val	Arg	Ala	
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gtc	atg	aag	cgg	gtg	gtg	gag	gat	acc	acc	gcc	atc	gac	gtg	cag	gtg	1827
Val	Met	Lys	Arg	Val	Val	Glu	Asp	Thr	Thr	Ala	Ile	Asp	Val	Gln	Val	
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ctg	ccc	agg	ctg	gcc	ggg	gta	gcc	ctg	acg	cag	gct	ggg	ggt	act	gtc	1875
Leu	Pro	Arg	Leu	Ala	Gly	Val	Ala	Leu	Thr	Gln	Ala	Gly	Gly	Thr	Val	
525					530					535					540	
cct	tca	aga	ggg	gct	ggg	gca	gca	gag	gat	cac	tgg	cag	tcc	ctg	cct	1923
Pro	Ser	Arg	Gly	Ala	Gly	Ala	Ala	Glu	Asp	His	Trp	Gln	Ser	Leu	Pro	
541					546					551					556	
gga	gga	ggg	gac	atg	tgt	atc	tgg	gct	tct	cac	ggg	gcc	agt	tct	gta	1971
Gly	Gly	Gly	Asp	Met	Cys	Ile	Trp	Ala	Ser	His	Gly	Ala	Ser	Ser	Val	
557					562					567					572	
gcc	agg	gcg	tcc	gtg	agg	gaa	ccc	cag	ggg	aac	aag	tct	cca	agg	atg	2019
Ala	Arg	Ala	Ser	Val	Arg	Glu	Pro	Gln	Gly	Asn	Lys	Ser	Pro	Arg	Met	
573					578					583					588	
aat	acc	aaa	cgg	gct	ggg	gag	tgc	cta	tgt	cca	cgg	tct	tgt	tcc	ttc	2067
Asn	Thr	Lys	Arg	Ala	Gly	Glu	Cys	Leu	Cys	Pro	Arg	Ser	Cys	Ser	Phe	
589					594					599					604	
tca	gcc	cag	gat	tat	gac	atc	ttc	gcc	cct	att	tta	cct	gtg	gag	aag	2115
Ser	Ala	Gln	Asp	Tyr	Asp	Ile	Phe	Ala	Pro	Ile	Leu	Pro	Val	Glu	Lys	

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cag agg ctc agg gtt acc cag gaa gtc agg gca ggg ttg gtg ctg gtg				2163
Gln Arg Leu Arg Val Thr Gln Glu Val Arg Ala Gly Leu Val Leu Val				
621	626	631	636	
ctg aag att aga cct cag acc aac tct tgt atc ctg cct ttg ccc cac				2211
Leu Lys Ile Arg Pro Gln Thr Asn Ser Cys Ile Leu Pro Leu Pro His				
637	642	647	652	
tcc act ggt tct ata aat agc gac cat gta cct act aaa tag cgggccc				2260
Ser Thr Gly Ser Ile Asn Ser Asp His Val Pro Thr Lys *				
653	658	663		
cgcggtgatt accctgtgat ccttgtgatg cttgagtagc tgacttaggg catcctcagc				2320
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caggtggggc tcctgtacga agaggggtgt cgcaaggccc agagcagcga ctccagcaag				2440
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cggtgcg atg ggg gaa gca gag aag ttt cac tac atc tat agt tgt gac	169
Met Gly Glu Ala Glu Lys Phe His Tyr Ile Tyr Ser Cys Asp	
1 5 10	
ctg gat atc aac gtc cag ctt aag ata gga agc ttg gaa ggg aag aga	217
Leu Asp Ile Asn Val Gln Leu Lys Ile Gly Ser Leu Glu Gly Lys Arg	
15 / 20 25 30	
gaa caa aag agt tat aaa gct gtc ctg gaa gac cca atg ttg aag ttc	265
Glu Gln Lys Ser Tyr Lys Ala Val Leu Glu Asp Pro Met Leu Lys Phe	

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tca gga cta tat caa gag aca tgc tct gat ctt tat gtt act tgt caa				313
Ser Gly Leu Tyr Gln Glu Thr Cys Ser Asp Leu Tyr Val Thr Cys Gln				
47	52	57	62	
ggt ttt gca gaa ggg aag cct ttg gcc ttg cca gtg aga aca tcc tac				361
Val Phe Ala Glu Gly Lys Pro Leu Ala Leu Pro Val Arg Thr Ser Tyr				
63	68	73	78	
aaa gca ttt agt aca aga tgg aac tgg aat gaa tgg ctg aaa cta cca				409
Lys Ala Phe Ser Thr Arg Trp Asn Trp Asn Glu Trp Leu Lys Leu Pro				
79	84	89	94	
gta aaa tac cct gac ctg ccc agg aat gcc caa gtg gcc ctc acc ata				457
Val Lys Tyr Pro Asp Leu Pro Arg Asn Ala Gln Val Ala Leu Thr Ile				
95	100	105	110	
tgg gat gtg tat ggt ccc gga aaa gca gtg cct gta gga gga aca acg				505
Trp Asp Val Tyr Gly Pro Gly Lys Ala Val Pro Val Gly Gly Thr Thr				
111	116	121	126	
ggt tgc ctc ttt gga aaa tac ggc atg ttt cgc caa ggg atg cat gac				553
Val Ser Leu Phe Gly Lys Tyr Gly Met Phe Arg Gln Gly Met His Asp				
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Leu Lys Val Trp Pro Asn Val Glu Ala Asp Gly Ser Glu Pro Thr Lys				
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Thr Pro Gly Arg Thr Ser Ser Thr Leu Ser Glu Asp Gln Met Ser Arg				
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ctt gcc aag ctc acc aaa gct cat cga caa gga cac atg gtg aaa gta				697
Leu Ala Lys Leu Thr Lys Ala His Arg Gln Gly His Met Val Lys Val				
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Ser Val Lys Arg Ser Ser Asn Phe Met Tyr Leu Met Gly Gly Phe Arg				
207	212	217	222	
tgt gtc aag tgt gat gat aag gaa tat ggt att gtt tat tat gaa aag				841
Cys Val Lys Cys Asp Asp Lys Glu Tyr Gly Ile Val Tyr Tyr Glu Lys				
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Asp Gly Asp Glu Ser Ser Pro Ile Leu Thr Ser Phe Glu Leu Val Lys				
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Val Pro Asp Pro Gln Met Ser Leu Glu Asn Leu Val Glu Ser Lys His				
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His Asn Leu Pro Arg Ser Leu Arg Ser Gly Pro Ser Asp His Asp Leu	
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Lys Pro Tyr Pro Ser Pro Arg Asp Gln Leu Asn Ile Ile Val Ser Tyr	
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cca cca acc aag caa ctt aca tat gaa gaa caa gat ctt gtt tgg aag	1081
Pro Pro Thr Lys Gln Leu Thr Tyr Glu Glu Gln Asp Leu Val Trp Lys	
303 308 313 318	
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Phe Arg Tyr Tyr Leu Thr Asn Gln Glu Lys Ala Leu Thr Lys Phe Leu	
319 324 329 334	
aaa tgt gtt aat tgg gat cta cct caa gag gcc aaa cag gcc ttg gaa	1177
Lys Cys Val Asn Trp Asp Leu Pro Gln Glu Ala Lys Gln Ala Leu Glu	
335 340 345 350	
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Arg Leu Arg Gln Ala Asp Asp Glu Asp Leu Leu Met Tyr Leu Leu Gln	
383 388 393 398	
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Leu Val Gln Ala Leu Lys Tyr Glu Asn Phe Asp Asp Ile Lys Asn Gly	
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Leu Glu Pro Thr Lys Lys Asp Ser Gln Ser Ser Val Ser Glu Asn Val	
415 420 425 430	
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Ser Asn Ser Gly Ile Asn Ser Ala Glu Ile Asp Ser Ser Gln Ile Ile	
431 436 441 446	
acc agc ccc ctt cct tca gtc tct tca cct cct cct gca tca aaa aca	1513
Thr Ser Pro Leu Pro Ser Val Ser Ser Pro Pro Pro Ala Ser Lys Thr	
447 452 457 462	
aaa gaa gtt cca gat ggc gaa aat ctg gaa caa gat ctc tgt acc ttc	1561
Lys Glu Val Pro Asp Gly Glu Asn Leu Glu Gln Asp Leu Cys Thr Phe	
463 468 473 478	
ttg ata tcg aga gcc tgc aaa aac tca aca ctg gct aat tat tta tac	1609
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Ala Ala Arg Lys Ser Gln Ile Lys Ala Arg Ile Thr Asp Thr Ile Gly
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cca aca gaa acc tca att gca cca aga caa aga cca aag gcc aac tct      211
Pro Thr Glu Thr Ser Ile Ala Pro Arg Gln Arg Pro Lys Ala Asn Ser
  23                               28                               33                               38
gct act act gcc act ccc agt gtg ctg acc att caa agt tca gca aca      259
Ala Thr Thr Ala Thr Pro Ser Val Leu Thr Ile Gln Ser Ser Ala Thr
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cct gtt aaa gtc ctt gct cct ggt gaa ttc ggt aac cat aga cca aaa      307
Pro Val Lys Val Leu Ala Pro Gly Glu Phe Gly Asn His Arg Pro Lys
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cct cct cag cag ccg cca cag cag cat aga gta ctc cag caa cta cag      403
Pro Pro Gln Gln Pro Pro Gln Gln His Arg Val Leu Gln Gln Leu Gln
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Gln Gly Asp Trp Arg Leu Gln Gln Leu His Leu Gln His Arg His Pro
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cac cag cag cag cag cag cag cag cag caa cag caa cag cag cag cag      499
His Gln Gln Gln Gln Gln Gln Gln Gln Gln Gln Gln Gln Gln Gln
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caa cag caa cag cag cag cag cag cag cag cag cag cac cac cac cac      547
Gln Gln Gln Gln Gln Gln Gln Gln Gln Gln Gln Gln His His His His
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cac cac cac cac cta ctt caa gat gct tat atg cag cag tat caa cat      595
His His His His Leu Leu Gln Asp Ala Tyr Met Gln Gln Tyr Gln His
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gca aca cag cag caa cag atg ctt caa caa caa ttt tta atg cat tcg      643
Ala Thr Gln Gln Gln Gln Met Leu Gln Gln Gln Phe Leu Met His Ser

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183	188	193	198	
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Gln Tyr Gln Gln Ala Phe Phe Gln Gln Gln Met Leu Ala Gln His Gln				
199	204	209	214	
ccg tct caa caa cag gca tca cct gaa tat ctt acc tcc cct caa gag				787
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Phe Ser Pro Ala Leu Val Ser Tyr Thr Ser Ser Leu Pro Ala Gln Val				
231	236	241	246	
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Gly Thr Ile Met Asp Ser Ser Tyr Ser Ala Asn Arg Ser Val Ala Asp				
247	252	257	262	
aaa gag gcc att gca aat ttc aca aat cag aag aac atc agc aat cca				931
Lys Glu Ala Ile Ala Asn Phe Thr Asn Gln Lys Asn Ile Ser Asn Pro				
263	268	273	278	
cct gat atg tca ggg tgg aat cct ttt gga gag gat aat ttc tct aag				979
Pro Asp Met Ser Gly Trp Asn Pro Phe Gly Glu Asp Asn Phe Ser Lys				
279	284	289	294	
tta aca gaa gag gaa cta ttg gac aga gaa ttt gac ctt cta aga tca				1027
Leu Thr Glu Glu Glu Leu Leu Asp Arg Glu Phe Asp Leu Leu Arg Ser				
295	300	305	310	
aat agg ctc gag gag aga gca tcc tca gat aag aat gta gac tca ctt				1075
Asn Arg Leu Glu Glu Arg Ala Ser Ser Asp Lys Asn Val Asp Ser Leu				
311	316	321	326	
tct gct cca cat aac cat cct cca gaa gat cct ttt ggt tct gtt cct				1123
Ser Ala Pro His Asn His Pro Pro Glu Asp Pro Phe Gly Ser Val Pro				
327	332	337	342	
ttc att tct cat tca ggt tct cct gaa aag aaa gct gaa cat tca tct				1171
Phe Ile Ser His Ser Gly Ser Pro Glu Lys Lys Ala Glu His Ser Ser				
343	348	353	358	
ata aat caa gaa aat ggc act gca aac cct atc aag aac ggt aaa aca				1219
Ile Asn Gln Glu Asn Gly Thr Ala Asn Pro Ile Lys Asn Gly Lys Thr				
359	364	369	374	
agt cca gca tct aaa gat cag cgg act gga aag aaa acc tca gta cag				1267
Ser Pro Ala Ser Lys Asp Gln Arg Thr Gly Lys Lys Thr Ser Val Gln				
375	380	385	390	
ggt caa gtg caa aag ggg aat gat gaa tct gaa agt gat ttt gaa tca				1315
Gly Gln Val Gln Lys Gly Asn Asp Glu Ser Glu Ser Asp Phe Glu Ser				
391	396	401	406	

gat ccc cct tct cct aag agc agt gaa gag gaa gag caa gat gat gaa	1363
Asp Pro Pro Ser Pro Lys Ser Ser Glu Glu Glu Glu Gln Asp Asp Glu	
407 412 417 422	
gaa gtt ctt cag ggg gaa caa gga gat ttt aat gat gat gat act gaa	1411
Glu Val Leu Gln Gly Glu Gln Gly Asp Phe Asn Asp Asp Asp Thr Glu	
423 428 433 438	
cca gaa aat ctg ggt cat agg cct ctc ctc atg gat tct gaa gat gag	1459
Pro Glu Asn Leu Gly His Arg Pro Leu Leu Met Asp Ser Glu Asp Glu	
439 444 449 454	
gaa gaa gag gag aaa cat agc tct gat tct gat tat gag cag gct aaa	1507
Glu Glu Glu Glu Lys His Ser Ser Asp Ser Asp Tyr Glu Gln Ala Lys	
455 460 465 470	
gca aag tac agt gac atg agc tct gtc tac aga gac aga tct ggc agt	1555
Ala Lys Tyr Ser Asp Met Ser Ser Val Tyr Arg Asp Arg Ser Gly Ser	
471 476 481 486	
gga cca acc caa gat ctt aat aca ata ctc ctc acc tca gcc caa tta	1603
Gly Pro Thr Gln Asp Leu Asn Thr Ile Leu Leu Thr Ser Ala Gln Leu	
487 492 497 502	
tcc tct gat gtt gca gtg gag act ccc aaa cag gag ttt gat gta ttt	1651
Ser Ser Asp Val Ala Val Glu Thr Pro Lys Gln Glu Phe Asp Val Phe	
503 508 513 518	
ggc gct gtc ccc ttc ttt gca gtg cgt gct caa cag ccc cag caa gaa	1699
Gly Ala Val Pro Phe Phe Ala Val Arg Ala Gln Gln Pro Gln Gln Glu	
519 524 529 534	
aag aat gaa aag aac ctc cct caa cac agg ttt cct gct gca gga ctg	1747
Lys Asn Glu Lys Asn Leu Pro Gln His Arg Phe Pro Ala Ala Gly Leu	
535 540 545 550	
gag cag gag gaa ttt gat gta ttc aca aag gcg cct ttt agc aag aag	1795
Glu Gln Glu Glu Phe Asp Val Phe Thr Lys Ala Pro Phe Ser Lys Lys	
551 556 561 566	
gtg aat gta caa gaa tgc cat gca gtg ggg cct gag gca cat act atc	1843
Val Asn Val Gln Glu Cys His Ala Val Gly Pro Glu Ala His Thr Ile	
567 572 577 582	
cct ggt tat ccc aaa agt gta gat gta ttt ggc tcc act cca ttt cag	1891
Pro Gly Tyr Pro Lys Ser Val Asp Val Phe Gly Ser Thr Pro Phe Gln	
583 588 593 598	
ccc ttc ctc aca tca aca agt aaa agt gaa agc aat gag gac ctt ttt	1939
Pro Phe Leu Thr Ser Thr Ser Lys Ser Glu Ser Asn Glu Asp Leu Phe	
599 604 609 614	
ggg ctt gtg ccc ttt gat gaa ata acg ggg agc cag cag caa aaa gtc	1987
Gly Leu Val Pro Phe Asp Glu Ile Thr Gly Ser Gln Gln Gln Lys Val	
615 620 625 630	

aaa cag cgc agc tta cag aaa ctg tcc tct cgc caa agg cgc aca aag Lys Gln Arg Ser Leu Gln Lys Leu Ser Ser Arg Gln Arg Arg Thr Lys 631 636 641 646	2035
cag gat atg tcc aaa agt aat ggg aag cgg cat cat ggc acg cca act Gln Asp Met Ser Lys Ser Asn Gly Lys Arg His His Gly Thr Pro Thr 647 652 657 662	2083
agc aca aag aag act ttg aag cct acc tat cgc act cca gag agg gct Ser Thr Lys Lys Thr Leu Lys Pro Thr Tyr Arg Thr Pro Glu Arg Ala 663 668 673 678	2131
cgc agg cac aaa aaa gtg ggc cgc cga gac tct caa agt agc aat gaa Arg Arg His Lys Lys Val Gly Arg Arg Asp Ser Gln Ser Ser Asn Glu 679 684 689 694	2179
ttt tta acc atc tca gac tcc aag gag aac att agt gtt gca ctg act Phe Leu Thr Ile Ser Asp Ser Lys Glu Asn Ile Ser Val Ala Leu Thr 695 700 705 710	2227
gat ggg aaa gat agg ggg aat gtc tta caa cct gag gag agc ctg ttg Asp Gly Lys Asp Arg Gly Asn Val Leu Gln Pro Glu Glu Ser Leu Leu 711 716 721 726	2275
gac ccc ttc ggt gcc aag ccc ttc cat tct cca gac ctg tca tgg cac Asp Pro Phe Gly Ala Lys Pro Phe His Ser Pro Asp Leu Ser Trp His 727 732 737 742	2323
cct cca cat cag ggc ctg agc gac atc cgt gct gat cac aat act gtc Pro Pro His Gln Gly Leu Ser Asp Ile Arg Ala Asp His Asn Thr Val 743 748 753 758	2371
ctg cca ggg cgg cca aga caa aat tca cta cat ggg tca ttc cat agt Leu Pro Gly Arg Pro Arg Gln Asn Ser Leu His Gly Ser Phe His Ser 759 764 769 774	2419
gca gat gta ttg aaa atg gat gat ttt ggt gcc gtg ccc ttt aca gaa Ala Asp Val Leu Lys Met Asp Asp Phe Gly Ala Val Pro Phe Thr Glu 775 780 785 790	2467
ctt gtg gtg caa agc atc act cca cat cag tcc caa cag tcc caa cca Leu Val Val Gln Ser Ile Thr Pro His Gln Ser Gln Gln Ser Gln Pro 791 796 801 806	2515
gtc gaa tta gac cca ttt ggt gct gct cca ttt cct tct aaa cag tag Val Glu Leu Asp Pro Phe Gly Ala Ala Pro Phe Pro Ser Lys Gln * 807 812 817 822	2563
atacttctga tggattctcg gcattaactc ctgtttcaaaa aaagtgtgaa cagttttatg	2623
aatttgaaag aaaatttggt agctctttat agcattcatt cttaaagatc agtcagaata	2683
ggtgatttct aaataaacca aatagaagaa tgaagtatct ctacagggtgta gtaacttgat	2743
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catcacaaca cagaaatgca agtgtggtac ttccagttaa agcacatggc acctttctag	2863

gtgtgtagcc actgagaagg gacagtgaaa ctgttatttt tgatatcaga atgtcatttt 2923  
tatgtgcata tccctaaaat tagggttatt tctacataca ctagttacac ttgtgaattt 2983  
ttttaaggt ctcttttaaat ttccagacag ttaaaaacaa tctagttatc ttaaagcatt 3043  
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gagccagaag taactgacta ttgtgcctaa aactctgttt cattttttaa aacaagtgcc 3163  
attaaaatgg aatatctaata gataagcata tgaaataatg tgtaattagc tcaatttaac 3223  
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<212> DNA  
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<222> (1)...(776)  
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tttcctgtaa tggaagatgg gaaatatgtc gataaatggg caatacgaac gacggcaatg 180  
attgccagag aacttggttaa acagaacaac aaagctgcct gatagtggcc tttatttttg 240  
gcataaataa cagaataaac actgcactgt gtattcattc caacgagtga atacacggag 300  
caatgtcgct cgtaactaaa caggagccga cttgttctga ttattggaaa tcttctttgc 360  
cctccagtgt gagggcgatt ttttatctgt gaggatatga acag atg tca aac atc 416  
Met Ser Asn Ile  
1  
aaa aaa tac atc att gat tac gac tgg aaa gca tca ata gaa att gaa 464  
Lys Lys Tyr Ile Ile Asp Tyr Asp Trp Lys Ala Ser Ile Glu Ile Glu  
5 10 / 15 20  
atc gac cat gac gta atg aca gag gaa aaa ctt cac cag att aat aat 512  
Ile Asp His Asp Val Met Thr Glu Glu Lys Leu His Gln Ile Asn Asn

21	26	31	36	
ttc tgg tca gac tct gaa tac cga ctc aat aaa cac ggc tct gta tta				560
Phe Trp Ser Asp Ser Glu Tyr Arg Leu Asn Lys His Gly Ser Val Leu				
37	42	47	52	
aat gct gta tta atc atg ctg gcg caa cat gct ctg ctt ata gca att				608
Asn Ala Val Leu Ile Met Leu Ala Gln His Ala Leu Leu Ile Ala Ile				
53	58	63	68	
tca agc gac tta aat gca tat ggt gtt gtg tgt gag ttc gac tgg aat				656
Ser Ser Asp Leu Asn Ala Tyr Gly Val Val Cys Glu Phe Asp Trp Asn				
69	74	79	84	
gat gga aat ggt cag gaa gga tgg cct cca atg gat ggt agc gaa gga				704
Asp Gly Asn Gly Gln Glu Gly Trp Pro Pro Met Asp Gly Ser Glu Gly				
85	90	95	100	
ata aga att acc gat atc gat aca tca gga ata ttt att cag atg ata				752
Ile Arg Ile Thr Asp Ile Asp Thr Ser Gly Ile Phe Ile Gln Met Ile				
101	106	111	116	
tga ctatcaagcc tgcagcgtgg t				776
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117				

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cctccccaaaa tgctggg atg aca ggc gtg agg cac cac acc cag cta caa	170
Met Thr Gly Val Arg His His Thr Gln Leu Gln	
1 5	
ctg cag act cag tgg gat cct cct act tgg gaa agc cca gga gat gat	218
Leu Gln Thr Gln Trp Asp Pro Pro Thr Trp Glu Ser Pro Gly Asp Asp	
12 17 22 27	
gcc agc ctt gag cat gaa gct gag atg gac ctg gga act cca aca tat	266
Ala Ser Leu Glu His Glu Ala Glu Met Asp Leu Gly Thr Pro Thr Tyr	
28 33 38 43	
gat gaa aac ccc atg aag gcc tcg aaa aag ccc aag aca gca gaa gca	314

Asp	Glu	Asn	Pro	Met	Lys	Ala	Ser	Lys	Lys	Pro	Lys	Thr	Ala	Glu	Ala		
44					49					54					59		
gac acc tcc agt gaa cta gca aag aaa agc aaa gaa gta ttc aga aaa 362																	
Asp	Thr	Ser	Ser	Glu	Leu	Ala	Lys	Lys	Ser	Lys	Glu	Val	Phe	Arg	Lys		
60					65					70					75		
gag atg tcc cag ttc atc gtc cag tgc ctg aac cct tac cgg aaa cct 410																	
Glu	Met	Ser	Gln	Phe	Ile	Val	Gln	Cys	Leu	Asn	Pro	Tyr	Arg	Lys	Pro		
76					81					86					91		
gac tgc aaa gtg gga aga att acc aca act gaa gac ttt aaa cat ctg 458																	
Asp	Cys	Lys	Val	Gly	Arg	Ile	Thr	Thr	Thr	Glu	Asp	Phe	Lys	His	Leu		
92					97					102					107		
gct cgc aag ctg act cac ggt gtt atg aat aag gag ctg aag tac tgt 506																	
Ala	Arg	Lys	Leu	Thr	His	Gly	Val	Met	Asn	Lys	Glu	Leu	Lys	Tyr	Cys		
108					113					118					123		
aag aat cct gag gac ctg gag tgc aat gag aat gtg aaa cac aaa acc 554																	
Lys	Asn	Pro	Glu	Asp	Leu	Glu	Cys	Asn	Glu	Asn	Val	Lys	His	Lys	Thr		
124					129					134					139		
aag gag tac att aag aag tac atg cag aag ttt ggg gct gtt tac aaa 602																	
Lys	Glu	Tyr	Ile	Lys	Lys	Tyr	Met	Gln	Lys	Phe	Gly	Ala	Val	Tyr	Lys		
140					145					150					155		
ccc aaa gag gac act gaa tta gag tga ctgtt gggccagggt gggaggatgg 654																	
Pro	Lys	Glu	Asp	Thr	Glu	Leu	Glu	*									
156					161												
gtggtcaggt aagacagact ctaggagag gaaatcctgt gggcctttct gtcccacccc 714																	
tgtcagcact gtgctactga tgatacatca ccctggggaa ttcaaccctg cagatgtcaa 774																	
ctgaaggcca caaaattgaa ctcatctaca agtgattacc tagttgtgag ctgttgcat 834																	
gtggttagaa gccatcagag gtgcaagggc ttagaaaaga ccctggccag acctgactcc 894																	
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tgaaaataat ttgttttttc ctgggttttg tttggttttc gttttgcttt tagcctctac 1074																	
atgctaggat cacaggaaga ctttgtaagg acagtttaag ttctcctgca aggtttaatt 1134																	
tgttatcatg taaatattcc aaagcaggct gccttggtgt tttggccagc cttgtgctat 1194																	
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<220>  
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 <222> (403) .. (723)

<400> 478

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cccttaagga ttcctatgcc atgtaacagc acaggcatgg gtgtgatctc acgtgttcac      180
agcttccggg ggctaggatg agacatgctt gggggcgggg gccacttaaa aatgtgcctg      240
cactgtgggc gtgatgctct gcactgtgga aggaaaagga gttaaagag aaatgatggg      300
gggcgctgag cctgagcagc gccgctttgt gccgcagcat caacctgtgg gaaatggcgg      360
agttcctgct gaaacaggac gtggtcaacg ccatcaacct gg   atg ggg gtg gct      414
                                   Met Gly Val Ala
                                   1

ctg cca cct ttg tgc tca acg gga cct tgg cca gtt acc cgt cag atc      462
Leu Pro Pro Leu Cys Ser Thr Gly Pro Trp Pro Val Thr Arg Gln Ile
   5                10                15                20

act gcc agg aca aca tgt ggc gct gtc ccc gcc aag tgt cca ccg tgg      510
Thr Ala Arg Thr Thr Cys Gly Ala Val Pro Ala Lys Cys Pro Pro Trp
  21                26                31                36

tgt gtg tgc acg aac ccc gct gcc agc cgc ctg act gcc acg gcc acg      558
Cys Val Cys Thr Asn Pro Ala Ala Ser Arg Leu Thr Ala Thr Ala Thr
  37                42                47                52

gga cct gcg tgg acg ggc act gcc aat gca ccg ggc act tct ggc ggg      606
Gly Pro Ala Trp Thr Gly Thr Ala Asn Ala Pro Gly Thr Ser Gly Gly
  53                58                63                68

gtc ccg gct gtg atg agc tgg act gtg gcc cct cta act gca gcc agc      654
Val Pro Ala Val Met Ser Trp Thr Val Ala Pro Leu Thr Ala Ala Ser
  69                74                79                84

acg gac tgt gca cgg aga ccg gct gcc gct gtg atg ccg gat gga ccg      702
Thr Asp Cys Ala Arg Arg Pro Ala Ala Ala Val Met Pro Asp Gly Pro
  85                90                95                100

ggg cca act gca gtg aag taa ag cagtgtctcc agccacctgg aagccacct      755
Gly Pro Thr Ala Val Lys *
101                106

gagggcggga gaactctcct ttttcaccag gaccgcctgg ctagccctca ccttggcgct      815
ggccttctctc ctgctgatca gcattgcagc aaacctgtcc ttgctcctgt ccagagcaga      875

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gaggaaccgg cgctgcatg gggactatgc ataccacccg ctgcaggaga tgaacgggga	935
gcctctggcc gcagagaagg agcagccagg gggcgcccac aacccttca aggactgaag	995
cctcaagctg cccgggggtg cacgtcgca aagcttggtt cccacgggtc tggcttctgc	1055
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gccaagttcc tgatagcact tgtgcctcag cccctcacct ggccacctgc cagggcacct	1175
gcaaccctag caataccatg ctgctggag aggtcagct gcctgcttct cgctgcctg	1235
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tgtgacacgg gacccctttt ctacagacct catcactgga ttgccaact agaattcgat	1475
ttctgtcat aggaagctcc ttggaagaag ggatgggggg atgaaatcat gtttacagac	1535
ctgttttctc atcctgctgc caagaagttt ttaatacact tgaataaatt gatataataa	1595
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tggacttcac ttacaggtct taagcacaag aaatgaaaat aagctgcttc ctaaacaacc	180
tcatttagtg cggcaaaagc ggcctggat caccgcccc gtggctcttc tggagggaga	240
ggatctgtcc aagaagaatc caattgcaa gatacttct gatcttgag aagaaagagg	300
actcaaaatt acttacaat aactggaaa agggattaca gagccacctt ttggtatatt	360
tgtctttaac aaagatactg gagaactgaa tggtaccagc attcttgatc gagaagaaac	420
accatttttt ctgctaacag gttacgcttt ggatgcaaga ggaaacaatg tagagaaacc	480
cttagagcta cgcattaagg ttcttgatat caatgacaac gaaccagtgt tcacacagga	540



tgtctttgtt	gggtctgttg	aagagttgag	tcgagcacat	actcttgtg	atg aaa	595
					Met Lys	
					1	
atc aat gca aca gat gca gat gag ccc aat acc ctg aat tcg aaa att						643
Ile Asn Ala Thr Asp Ala Asp Glu Pro Asn Thr Leu Asn Ser Lys Ile						
3	8		13		18	
tcc tat aga atc gta tct ctg gag cct gct tat cct cca gtg ttc tac						691
Ser Tyr Arg Ile Val Ser Leu Glu Pro Ala Tyr Pro Pro Val Phe Tyr						
19	24		29		34	
cta aat aaa gat aca gga gag att tat aca acc agt gtt acc ttg gac						739
Leu Asn Lys Asp Thr Gly Glu Ile Tyr Thr Thr Ser Val Thr Leu Asp						
35	40		45		50	
aga gag gaa cac agc agc tac act ttg aca gta gaa gca aga gat ggc						787
Arg Glu Glu His Ser Ser Tyr Thr Leu Thr Val Glu Ala Arg Asp Gly						
51	56		61		66	
aat gga gaa gtt aca gac aaa cct gta aaa caa gct caa gtt cag att						835
Asn Gly Glu Val Thr Asp Lys Pro Val Lys Gln Ala Gln Val Gln Ile						
67	72		77		82	
cgt att ttg gat gtc aat gac aat ata cct gta gta gaa aat aaa gtg						883
Arg Ile Leu Asp Val Asn Asp Asn Ile Pro Val Val Glu Asn Lys Val						
83	88		93		98	
ctt gaa ggg atg gtt gaa gaa aat caa gtc aac gta gaa gtt acg cgc						931
Leu Glu Gly Met Val Glu Glu Asn Gln Val Asn Val Glu Val Thr Arg						
99	104		109		114	
gta aaa gtg ttc gat gca gat gaa ata ggt tct gat aat tgg ctg gca						979
Val Lys Val Phe Asp Ala Asp Glu Ile Gly Ser Asp Asn Trp Leu Ala						
115	120		125		130	
aat ttt aca ttt gca tca gga aat gaa gga ggt tat ttc cac ata gaa						1027
Asn Phe Thr Phe Ala Ser Gly Asn Glu Gly Gly Tyr Phe His Ile Glu						
131	136		141		146	
aca gat gct caa act aac gaa gga att gtg acc ctt att aag gaa gta						1075
Thr Asp Ala Gln Thr Asn Glu Gly Ile Val Thr Leu Ile Lys Glu Val						
147	152		157		162	
gat tat gaa gaa atg aag aat ctt gac ttc agt gtt att gtc gct aat						1123
Asp Tyr Glu Glu Met Lys Asn Leu Asp Phe Ser Val Ile Val Ala Asn						
163	168		173		178	
aaa gca gct ttt cac aag tcg att agg agt aaa tac aag cct aca ccc						1171
Lys Ala Ala Phe His Lys Ser Ile Arg Ser Lys Tyr Lys Pro Thr Pro						
179	184		189		194	
att ccc atc aag gtc aaa gtg aaa aat gtg aaa gaa ggc att cat ttt						1219
Ile Pro Ile Lys Val Lys Val Lys Asn Val Lys Glu Gly Ile His Phe						
195	200		205		210	
aaa agc agc gtc atc tca att tat gtt agc gag agc atg gat aga tca						1267

Lys	Ser	Ser	Val	Ile	Ser	Ile	Tyr	Val	Ser	Glu	Ser	Met	Asp	Arg	Ser		
211					216					221					226		
agc	aaa	ggc	caa	ata	att	gga	aat	ttt	caa	gct	ttt	gat	gag	gac	act	1315	
Ser	Lys	Gly	Gln	Ile	Ile	Gly	Asn	Phe	Gln	Ala	Phe	Asp	Glu	Asp	Thr		
227					232					237					242		
gga	cta	cca	gcc	cat	gca	aga	tat	gta	aaa	tta	gaa	gat	aga	gat	aat	1363	
Gly	Leu	Pro	Ala	His	Ala	Arg	Tyr	Val	Lys	Leu	Glu	Asp	Arg	Asp	Asn		
243					248					253					258		
tgg	atc	tct	gtg	gat	tct	gtc	aca	tct	gaa	att	aaa	ctt	gca	aaa	ctt	1411	
Trp	Ile	Ser	Val	Asp	Ser	Val	Thr	Ser	Glu	Ile	Lys	Leu	Ala	Lys	Leu		
259					264					269					274		
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Pro	Asp	Phe	Glu	Ser	Arg	Tyr	Val	Gln	Asn	Gly	Thr	Tyr	Thr	Val	Lys		
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Arg Asn Leu Asn Leu Phe Lys Leu Phe Arg Leu Val His Lys Leu Gly	
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Asp Leu Gly Ile Pro Val Leu Asn Ser Ala Ala Gly Tyr Asn Val Lys	
49 54 59 64	
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Cys Ala Tyr Lys Lys Tyr Leu Tyr Gly Phe Glu Glu Tyr Cys Arg Ser	
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Pro Asn Ile Glu Phe Gln Met Ala Leu Pro Glu Lys Val Val Asn Lys	
81 86 91 96	

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Gln Cys Lys Glu Cys Glu Asn Val Lys Glu Ile Lys Val Lys Glu Glu	
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Ile Pro Arg Glu Glu Lys Pro Ile Glu Asp Glu Ile Glu Arg Lys Glu	
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Trp Ser Ser Ile Gln Gly Gln Trp Pro Lys Lys Thr Leu Lys Glu Leu				
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Phe Asp Val Thr Val Lys Met Ser Thr Tyr Leu Val Ala Phe Ile Ile	
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Ser Asp Phe Glu Ser Val Ser Lys Ile Thr Lys Ser Gly Val Lys Val	
252 257 262 267	
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Ser Val Tyr Ala Val Pro Asp Lys Ile Asn Gln Ala Asp Tyr Ala Leu	
268 273 278 283	
gat gct gcg gtg act ctt cta gaa ttt tat gag gat tat ttc agc ata	1155
Asp Ala Ala Val Thr Leu Leu Glu Phe Tyr Glu Asp Tyr Phe Ser Ile	
284 289 294 299	
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Pro Tyr Pro Leu Pro Lys Gln Asp Leu Ala Ala Ile Pro Asp Phe Gln	
300 305 310 315	
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Ser Gly Ala Met Glu Asn Trp Gly Leu Thr Thr Tyr Arg Glu Ser Ala	
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Val Thr Met Glu Trp Trp Asn Asp Leu Trp Leu Asn Glu Gly Phe Ala	
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Lys Phe Met Glu Phe Val Ser Val Ser Val Thr His Pro Glu Leu Lys	
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Val Gly Asp Tyr Phe Phe Gly Lys Cys Phe Asp Ala Met Glu Val Asp	
396 401 406 411	
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Ala Leu Asn Ser Ser His Pro Val Ser Thr Pro Val Glu Asn Pro Ala	
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Gln Ile Arg Glu Met Phe Asp Asp Val Ser Tyr Asp Lys Gly Ala Cys	

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Gly Ile Val Gln Tyr Leu Gln Lys His Ser Tyr Lys Asn Thr Lys Asn				
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Glu Asp Leu Trp Asp Ser Met Ala Ser Ile Cys Pro Thr Asp Gly Val				
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Lys Gly Met Asp Gly Phe Cys Ser Arg Ser Gln His Ser Ser Ser Ser				
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Ser His Trp His Gln Glu Gly Val Asp Val Lys Thr Met Met Asn Thr				
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Ala Pro Asp Thr Gly Tyr Leu Trp His Val Pro Leu Thr Phe Ile Thr				
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Ser Lys Ser Asp Met Val His Arg Phe Leu Leu Lys Thr Lys Thr Asp				
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Val Leu Ile Leu Pro Glu Glu Val Glu Trp Ile Lys Phe Asn Val Gly				
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Met Asn Gly Tyr Tyr Ile Val His Tyr Glu Asp Asp Gly Trp Asp Ser				
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Leu Thr Gly Leu Leu Lys Gly Thr His Thr Ala Val Ser Ser Asn Asp				
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Arg Ala Ser Leu Ile Asn Asn Ala Phe Gln Leu Val Ser Ile Gly Lys				
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652	657	662	667	

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Met Leu Ile Lys Leu Ala Lys Pro Ala Met Leu Asn Pro Lys Val Gln	
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Glu Asn Thr Ala Lys Asp Lys *	
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5 10 15 20

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117 122 127 132

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133 138 143 148

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149 154 159 164

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165 170 175 180

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181 186 191 196

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Val Glu Tyr Gln Glu His Leu Cys Ala Met Thr Gly Val Asp Cys Cys	

421	426	431	436	
atc tcc agc ttt gac aaa tcg gtg ctc acc tta gcc agt gct ggg tgt				1399
Ile Ser Ser Phe Asp Lys Ser Val Leu Thr Leu Ala Ser Ala Gly Cys				
437	442	447	452	
aag agt gcc agc ctg aaa cat tgt ctg aat ggt gaa tcc aga aaa agt				1447
Lys Ser Ala Ser Leu Lys His Cys Leu Asn Gly Glu Ser Arg Lys Ser				
453	458	463	468	
gtg ctg tcc aaa ccg act gac tct tcc cct gag gtt ata aat tat tta				1495
Val Leu Ser Lys Pro Thr Asp Ser Ser Pro Glu Val Ile Asn Tyr Leu				
469	474	479	484	
gga aac aaa gca tgt gag tgc tac atc tca act gcc gat tgg gct gct				1543
Gly Asn Lys Ala Cys Glu Cys Tyr Ile Ser Thr Ala Asp Trp Ala Ala				
485	490	495	500	
gtg cag gaa tgg cag aac gct atc cat gac ttg aaa aag agt acc agt				1591
Val Gln Glu Trp Gln Asn Ala Ile His Asp Leu Lys Lys Ser Thr Ser				
501	506	511	516	
agc act tcc ctc aac ctg aaa gct gac ttc aac tat ata aaa tca tta				1639
Ser Thr Ser Leu Asn Leu Lys Ala Asp Phe Asn Tyr Ile Lys Ser Leu				
517	522	527	532	
agc agc ttt gag tct gga aaa ttt gtc gaa tgt acc gag caa tta gaa				1687
Ser Ser Phe Glu Ser Gly Lys Phe Val Glu Cys Thr Glu Gln Leu Glu				
533	538	543	548	
ttg tta cca gga gaa aat atc aat cta ctt gct gga gga tca aaa gaa				1735
Leu Leu Pro Gly Glu Asn Ile Asn Leu Leu Ala Gly Gly Ser Lys Glu				
549	554	559	564	
aaa ata gac atg aaa aaa ctg ctt cgt aac atg tga agtc cagatccaag				1785
Lys Ile Asp Met Lys Lys Leu Leu Arg Asn Met *				
565	570	575		
ggaacctcag aaatccattg aagttccatt gttaagaagt totgtttgtt tggcaactgc				1845
tttaaaccog atagaacaag atcagaagtg gcagtctata actgaaaatg tggtaaagta				1905
cttgaagcaa acatcccgca tcgctattgg acctctgaga ctttctactt taacagtttc				1965
acagtctttg ccagtttctaa gtaccttgca gctgtattgc tcgtctgctt tggagaccac				2025
agtttctaac agactttcaa cagaggactg tcttattcca ctcttcggcg aagctttacg				2085
ttcatgtaaa cagcatgacg tgaggccgtg gatgcaggca ttaaggtata ctgtgtacca				2145
gaatcagttg ttggagaaaa ttaaagttaa gtggttttcc tttttttttt ttgtaagaga				2205
aaattaaagg tggttttttt tttttaattt tgctttattg aggtttatat tacacattct				2265
aagtgtatgg tttgatgagt tctaacatgt cttcacttgt gtgaccacca atacgatcga				2325
gatacagaac agcgtcttac ccagaagggt tcccttgaga tcatctcttc atttgccct				2385

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catgtacgtg aaatcattac caccaaaa 2472

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<211> 1276

<212> DNA

<213> Homo sapiens

<220>

<221> CDS

<222> (331)..(930)

<400> 484

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ggcgggtagc tgtgcttttc tttcccgttt gtaggtgaaa cccattggc ttcattggct 180

ccttgattta aaccacgccc ggctttctgc cctctttgct gctgctgggc caggttgccc 240

agccatatcc cagccccgtc tgcagggagc cggaggtgct tgctgctgct attgtgtgga 300

tgccgcgcgt gtcttctctt ctttccagag atg gct aac agg ggc ccg agc 351  
Met Ala Asn Arg Gly Pro Ser  
1 5

tat ggc tta agc cga gag gtg cag gag aag atc gag cag aag tat gat 399  
Tyr Gly Leu Ser Arg Glu Val Gln Glu Lys Ile Glu Gln Lys Tyr Asp  
8 13 18 23

gcg gac ctg gag aac aag ctg gtg gac tgg atc atc ctg cag tgc gcc 447  
Ala Asp Leu Glu Asn Lys Leu Val Asp Trp Ile Ile Leu Gln Cys Ala  
24 29 34 39

gag gac ata gag cac ccg ccc ccc ggc agg gcc cat ttt cag aaa tgg 495  
Glu Asp Ile Glu His Pro Pro Pro Gly Arg Ala His Phe Gln Lys Trp  
40 45 50 55

tta atg gac ggg acg gtc ctg tgc aag ctg ata aat agt tta tac cca 543  
Leu Met Asp Gly Thr Val Leu Cys Lys Leu Ile Asn Ser Leu Tyr Pro  
56 61 66 71

cca gga caa gag ccc ata ccc aag atc tca gag tca aag atg gct ttt 591  
Pro Gly Gln Glu Pro Ile Pro Lys Ile Ser Glu Ser Lys Met Ala Phe  
72 77 82 87

aag cag atg gag caa atc tcc cag ttc cta aaa gct gcg gag acc tat 639  
Lys Gln Met Glu Gln Ile Ser Gln Phe Leu Lys Ala Ala Glu Thr Tyr  
88 93 98 103

ggg gtc aga acc acc gac atc ttt cag acg gtg gat cta tgg gaa ggg 687

Gly Val Arg Thr Thr Asp Ile Phe Gln Thr Val Asp Leu Trp Glu Gly	
104 109 114 119	
aag gac atg gca gct gtg cag agg acc ctg atg gct tta ggc agc gtt	735
Lys Asp Met Ala Ala Val Gln Arg Thr Leu Met Ala Leu Gly Ser Val	
120 125 130 135	
gca gtc acc aag gat gat ggc tgc tat cgg gga gag cca tcc tgg ttt	783
Ala Val Thr Lys Asp Asp Gly Cys Tyr Arg Gly Glu Pro Ser Trp Phe	
136 141 146 151	
cac agg aaa gcc cag cag aat cgg aga ggc ttt tcc gag gag cag ctt	831
His Arg Lys Ala Gln Gln Asn Arg Arg Gly Phe Ser Glu Glu Gln Leu	
152 157 162 167	
cgc cag gga cag aac gta ata ggc ctg cag atg ggc agc aac aag gga	879
Arg Gln Gly Gln Asn Val Ile Gly Leu Gln Met Gly Ser Asn Lys Gly	
168 173 178 183	
gcc tcc cag gcg ggc atg aca ggg tac ggg atg ccc agg cag atc atg	927
Ala Ser Gln Ala Gly Met Thr Gly Tyr Gly Met Pro Arg Gln Ile Met	
184 189 194 199	
tag gacg cggcatcctg cccctggtag agaggacgaa tgttccacac catggtctct	984
* 200	
acgaaaaaga aatagttagt caccttctga ccttctcctc tttctcaaag ccttctgtcc	1044
ctgggtttttg caagtgtctgc atttccgccg agaatccgcg ttgcctactg ctgccacctc	1104
ctgttcattt agaactatgc aaagactccg cttccgtttt cctgagctcc tcgggccccca	1164
gagtctctgt ttgattattt atttatttat ttatttattt gccaaaaatt ctctctttca	1224
acttatagaa tgcacctaat aaagtaatta gtcttgtgtc aaaaaaaaaa aa	1276

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taccagcagc agcactagac cccaacattg caacacttgg agagatacca cagccaccac	180
ttatgggaaa cgtggatcct tccaaaatag atgaaattag gagaacgggtt tatgttggaa	240

[illegible]



aag gaa cag gac aaa gaa aag gaa cga gaa aaa gac aga tcc aaa gag	1252
Lys Glu Gln Asp Lys Glu Lys Glu Arg Glu Lys Asp Arg Ser Lys Glu	
151 156 161 166	
ata gat gaa aaa aga aag aag gat aaa aaa tcc aga aca cca ccc agg	1300
Ile Asp Glu Lys Arg Lys Lys Asp Lys Lys Ser Arg Thr Pro Pro Arg	
167 172 177 182	
agt tac aat gca tcg cga aga tct cgt agt tcc agc agg gaa agg cgt	1348
Ser Tyr Asn Ala Ser Arg Arg Ser Arg Ser Ser Arg Glu Arg Arg	
183 188 193 198	
agg agg agg agc agg agt tct tcc aga tcg cca aga aca tca aaa acc	1396
Arg Arg Arg Ser Arg Ser Ser Ser Arg Ser Pro Arg Thr Ser Lys Thr	
199 204 209 214	
ata aaa agg aaa tct tct aga tct ccg tcc ccc agg aga aat aag aag	1444
Ile Lys Arg Lys Ser Ser Arg Ser Pro Ser Pro Arg Arg Asn Lys Lys	
215 220 225 230	
gat aaa aag aga gaa aaa gaa agg gac cac atc agt gaa aga aga gag	1492
Asp Lys Lys Arg Glu Lys Glu Arg Asp His Ile Ser Glu Arg Arg Glu	
231 236 241 246	
aga gaa cgt tca acg tct atg aga aag agt tct aat gat aga gat ggg	1540
Arg Glu Arg Ser Thr Ser Met Arg Lys Ser Ser Asn Asp Arg Asp Gly	
247 252 257 262	
aag gag aag ttg gag aag aac agt act tca ctt aaa gag aaa gag cac	1588
Lys Glu Lys Leu Glu Lys Asn Ser Thr Ser Leu Lys Glu Lys Glu His	
263 268 273 278	
aat aaa gaa cca gat tca agt gtg agc aaa gaa gta gat gac aag gat	1636
Asn Lys Glu Pro Asp Ser Ser Val Ser Lys Glu Val Asp Asp Lys Asp	
279 284 289 294	
gca cca agg act gag gaa aac aaa ata cag cac aat ggg aat tgt cag	1684
Ala Pro Arg Thr Glu Glu Asn Lys Ile Gln His Asn Gly Asn Cys Gln	
295 300 305 310	
ctg aat gaa gaa aac ctc tct acc aaa aca gaa gca gta tag gaccgac	1733
Leu Asn Glu Glu Asn Leu Ser Thr Lys Thr Glu Ala Val *	
311 316 321	
aagtgtacct ctgcactcaa tgctggaatc aaatccaaag cttttaattc tctcaacaag	1793
atgtaaacag gaaagaaatc tagttgagca tga	1826

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<211> 632

<212> DNA

<213> Homo sapiens

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<221> CDS

<222> (67)..(486)

<400> 486

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      Met Ser Ser Leu Pro Val Pro Tyr Thr Leu Pro Val Ser Leu
      1          5          10
cct gtt ggt tcg tgc gtg ata atc aca ggg aca ccg atc ctc act ttt      156
Pro Val Gly Ser Cys Val Ile Ile Thr Gly Thr Pro Ile Leu Thr Phe
15          20          25          30
gtc aag gac cca cag ctg gag gtg aat ttc tac act ggg atg gat gag      204
Val Lys Asp Pro Gln Leu Glu Val Asn Phe Tyr Thr Gly Met Asp Glu
31          36          41          46
gac tca gat att gct ttc caa ttc cga ctg cac ttt ggt cat cct gca      252
Asp Ser Asp Ile Ala Phe Gln Phe Arg Leu His Phe Gly His Pro Ala
47          52          57          62
atc atg aac agt tgt gtg ttt ggc ata tgg aga tat gag gag aaa tgc      300
Ile Met Asn Ser Cys Val Phe Gly Ile Trp Arg Tyr Glu Glu Lys Cys
63          68          73          78
tac tat tta ccc ttt gaa gat ggc aaa cca ttt gag ctg tgc atc tat      348
Tyr Tyr Leu Pro Phe Glu Asp Gly Lys Pro Phe Glu Leu Cys Ile Tyr
79          84          89          94
gtg cgt cac aag gaa tac aag gta atg gta aat ggc caa cgc att tac      396
Val Arg His Lys Glu Tyr Lys Val Met Val Asn Gly Gln Arg Ile Tyr
95          100          105          110
aac ttt gcc cat cga ttc ccg cca gca tct gtg aag atg ctg caa gtc      444
Asn Phe Ala His Arg Phe Pro Pro Ala Ser Val Lys Met Leu Gln Val
111          116          121          126
ttg aga gat atc tcc ctg acc aga gtg ctt atc agc gat tga gggagat      493
Leu Arg Asp Ile Ser Leu Thr Arg Val Leu Ile Ser Asp *
127          132          137
gatcagactc ctcatgttg aggaatccct ctttctacct gaccatggga ttcccagagc      553
ctactaacag aataatccct cctcaccctt tcccctacac ttgatcatta aaacagcacc      613
aaacctcaaa aaaaaaaaaa      632
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<211> 2102

<212> DNA

<213> Homo sapiens

<220>

<221> CDS

<222> (309)..(1283)

<400> 487

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agaagaaact gaggcctgga atttgattaa ctcattcaag gttaccagtg tggttaattca	180
tttgacacacc tgtttagcaag aaacagaagt tgaaggactg gaacaagtga actaggaaag	240
agggaaacgcc aatccaagga tagaaggaca aggacagaat caccagcact ggctgaaggt	300
acottaac atg ggg aat ctt ctt aaa gtt ttg aca tgc aca gac ctt gag	350
Met Gly Asn Leu Leu Lys Val Leu Thr Cys Thr Asp Leu Glu	
1 5 10	
cag ggg cca aat ttt ttc ctt gat ttt gaa aat gcc cag cct aca gag	398
Gln Gly Pro Asn Phe Phe Leu Asp Phe Glu Asn Ala Gln Pro Thr Glu	
15 20 25 30	
tct gag aag gaa att tat aat cag gtg aat gta gta tta aaa gat gca	446
Ser Glu Lys Glu Ile Tyr Asn Gln Val Asn Val Val Leu Lys Asp Ala	
31 36 41 46	
gaa ggc atc ttg gag gac ttg cag tca tac aga gga gct ggc cac gaa	494
Glu Gly Ile Leu Glu Asp Leu Gln Ser Tyr Arg Gly Ala Gly His Glu	
47 52 57 62	
ata cga gag gca atc cag cat cca gca gat gag aag ttg caa gag aag	542
Ile Arg Glu Ala Ile Gln His Pro Ala Asp Glu Lys Leu Gln Glu Lys	
63 68 73 78	
gca tgg ggt gca gtt gtt cca cta gta ggc aaa tta aag aaa ttt tac	590
Ala Trp Gly Ala Val Val Pro Leu Val Gly Lys Leu Lys Lys Phe Tyr	
79 84 89 94	
gaa ttt tct cag agg tta gaa gca gca tta aga ggt ctt ctg gga gcc	638
Glu Phe Ser Gln Arg Leu Glu Ala Ala Leu Arg Gly Leu Leu Gly Ala	
95 100 105 110	
tta aca agt acc cca tat tct ccc acc cag cat cta gag cga gag cag	686
Leu Thr Ser Thr Pro Tyr Ser Pro Thr Gln His Leu Glu Arg Glu Gln	
111 116 121 126	
gct ctt gct aaa cag ttt gca gaa att ctt cat ttc aca ctc cgg ttt	734
Ala Leu Ala Lys Gln Phe Ala Glu Ile Leu His Phe Thr Leu Arg Phe	
127 132 137 142	
gat gaa ctc aag atg aca aat cct gcc ata cag aat gat ttc agc tat	782
Asp Glu Leu Lys Met Thr Asn Pro Ala Ile Gln Asn Asp Phe Ser Tyr	
143 148 153 158	
tat aga aga aca ttg agt cgt atg agg att aac aat gta ccg gca gaa	830
Tyr Arg Arg Thr Leu Ser Arg Met Arg Ile Asn Asn Val Pro Ala Glu	
159 164 169 174	

gga gaa aat gaa gta aat aat gaa ttg gca aat cga atg tct ttg ttt	878
Gly Glu Asn Glu Val Asn Asn Glu Leu Ala Asn Arg Met Ser Leu Phe	
175 180 185 190	
tat gct gag gca act cca atg ctg aaa acc ttg agt gat gcc aca aca	926
Tyr Ala Glu Ala Thr Pro Met Leu Lys Thr Leu Ser Asp Ala Thr Thr	
191 196 201 206	
aaa ttt gta tca gag aat aaa aat tta cca ata gaa aat acc aca gat	974
Lys Phe Val Ser Glu Asn Lys Asn Leu Pro Ile Glu Asn Thr Thr Asp	
207 212 217 222	
tgt tta agc aca atg gct agt gta tgc aga gtc atg ctg gaa aca ccg	1022
Cys Leu Ser Thr Met Ala Ser Val Cys Arg Val Met Leu Glu Thr Pro	
223 228 233 238	
gaa tac aga agc aga ttt aca aat gaa gag aca gtg tca ttc tgc ttg	1070
Glu Tyr Arg Ser Arg Phe Thr Asn Glu Glu Thr Val Ser Phe Cys Leu	
239 244 249 254	
agg gta atg gtg ggt gtc ata ata ctc tat gac cac gta cat cca gtg	1118
Arg Val Met Val Gly Val Ile Ile Leu Tyr Asp His Val His Pro Val	
255 260 265 270	
gga gca ttt gct aaa act tcc aaa att gat atg aaa ggt tgt atc aaa	1166
Gly Ala Phe Ala Lys Thr Ser Lys Ile Asp Met Lys Gly Cys Ile Lys	
271 276 281 286	
gtt ctt aag gac caa cct cct aat agt gtg gaa ggt ctt cta aat gct	1214
Val Leu Lys Asp Gln Pro Pro Asn Ser Val Glu Gly Leu Leu Asn Ala	
287 292 297 302	
ctc agg tac aca aca aaa cat ttg aat gat gag act acc tcc aag caa	1262
Leu Arg Tyr Thr Thr Lys His Leu Asn Asp Glu Thr Thr Ser Lys Gln	
303 308 313 318	
att aaa tcc atg ctg caa taa ca attctggaat aagcacctgc tgtagacaga	1315
Ile Lys Ser Met Leu Gln *	
319 324	
agacagtatt ctgcaatgac tgagaatgca gtttttttagt gattgcaatt actatctcat	1375
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 ctgttgatga taaaataaaa atcagctttc atttttctaa aaaagtcaaa atgcaaactt 1975  
 aaaactttta acaaaaagtat tactaattta aaaaaagttt gtgttgggta ccgtcgacgc 2035  
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 ccagctt 2102

<210> 488  
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 cagatgccag tggatccata caactgctcc gcctgggtga atctgaggtc agtgacttgc 240  
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 tacagacatt tttctaaaac gatctctctt caatggtgag ctatatataa acgttctaag 360  
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 cagcagtgac tccacagggc agtccacct cctg atg gtg aat gag acg agg 772  
 Met Val Asn Glu Thr Arg  
 1  
 ccc agg ctg cag aaa gtg gcc tca tgg cag gca cat caa ttc gag gcc 820  
 Pro Arg Leu Gln Lys Val Ala Ser Trp Gln Ala His Gln Phe Glu Ala  
 7 12 17 22

tgg att gct gct ttc aat tac tgg cat cca gaa att gtg tat tca ggg	868
Trp Ile Ala Ala Phe Asn Tyr Trp His Pro Glu Ile Val Tyr Ser Gly	
23 28 33 38	
ggc gac gat ggc ctt ctg agg ggc tgg gac acc agg gta ccc ggc aaa	916
Gly Asp Asp Gly Leu Leu Arg Gly Trp Asp Thr Arg Val Pro Gly Lys	
39 44 49 54	
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Phe Leu Phe Thr Ser Lys Arg His Thr Met Gly Val Cys Ser Ile Gln	
55 60 65 70	
agc agc cct cat cgg gag cac atc ctg gcc acg gga agc tat gat gaa	1012
Ser Ser Pro His Arg Glu His Ile Leu Ala Thr Gly Ser Tyr Asp Glu	
71 76 81 86	
cac atc cta ctg tgg gac aca cga aac atg aag cag ccg ttg gca gat	1060
His Ile Leu Leu Trp Asp Thr Arg Asn Met Lys Gln Pro Leu Ala Asp	
87 92 97 102	
acg cct gtg cag ggt ggg gta tgg aga atc aag tgg cac cct ttc cac	1108
Thr Pro Val Gln Gly Gly Val Trp Arg Ile Lys Trp His Pro Phe His	
103 108 113 118	
cac cac ctg ctc ctg gcc gcc tgc atg cac agt ggc ttt aag atc ctc	1156
His His Leu Leu Leu Ala Ala Cys Met His Ser Gly Phe Lys Ile Leu	
119 124 129 134	
aac tgc caa aag gca atg gag gag agg cag gag gcg acg gtc ctg aca	1204
Asn Cys Gln Lys Ala Met Glu Glu Arg Gln Glu Ala Thr Val Leu Thr	
135 140 145 150	
tct cac aca ttg ccc gac tcg ctg gtg tat gga gcc gac tgg tcc tgg	1252
Ser His Thr Leu Pro Asp Ser Leu Val Tyr Gly Ala Asp Trp Ser Trp	
151 156 161 166	
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Leu Leu Phe Arg Ser Leu Gln Arg Ala Pro Ser Trp Ser Phe Pro Ser	
167 172 177 182	
aac cta gga acc aag acg gca gac ctg aag ggt gca agc gag ttg cca	1348
Asn Leu Gly Thr Lys Thr Ala Asp Leu Lys Gly Ala Ser Glu Leu Pro	
183 188 193 198	
aca ccc tgt cat gaa tgc aga gag gat aac gat ggg gag ggc cat gcc	1396
Thr Pro Cys His Glu Cys Arg Glu Asp Asn Asp Gly Glu Gly His Ala	
199 204 209 214	
aga ccc cag agt gga atg aag cca ctc aca gag ggc atg agg aag aat	1444
Arg Pro Gln Ser Gly Met Lys Pro Leu Thr Glu Gly Met Arg Lys Asn	
215 220 225 230	
ggc acc tgg ctg cag gct aca gca gcc acc aca cgt gac tgt ggc gtg	1492
Gly Thr Trp Leu Gln Ala Thr Ala Ala Thr Thr Arg Asp Cys Gly Val	
231 236 241 246	
aac cca gaa gaa gca gac tca gcc ttc agc ctc ctg gcc acc tgc tcc	1540

Asn Pro Glu Glu Ala Asp Ser Ala Phe Ser Leu Leu Ala Thr Cys Ser  
 247 252 257 262

ttc tat gac cat gcg ctc cac ctc tgg gag tgg gag ggg aac tga gct 1588  
 Phe Tyr Asp His Ala Leu His Leu Trp Glu Trp Glu Gly Asn \*  
 263 268 273

tgaaatcatg aagcccccttc ccacaaggaa accaggaggg agactgcgag tgagtgcccg 1648  
 ggaccacctc atcagagatg cttactgcag ccctgcaggt gcctgtgcac tgatggaatc 1708  
 cacagtgtag tcagaaaagc tgttgacttc tcttaaatca gcttccctgc tggggccctg 1768  
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Thr Ser Thr Asp Ser Ser Ser Asp Asp Glu Pro Pro Lys Lys Lys Lys	
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Lys Lys *	
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Met Ser Tyr Ala Glu. Lys Pro Asp Glu Ile Thr Lys  
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Asp Glu Trp Met Glu Lys Leu Asn Asn Leu His Val Gln Arg Ala Asp  
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Ala Ala Glu Lys Phe Arg Met Glu Ser Gly Ile Glu Pro Ser Val Asp  
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Leu Glu Thr Leu Asp Glu Arg Ile Lys Ile Arg Glu Met Ile Leu Lys  
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Trp Ser Glu Val Asn Gln Ala Val Leu Asp Tyr Glu Asn Arg Glu Ser	
173 178 183 188	
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Thr Pro Lys Leu Ala Lys Leu Leu Lys Leu Leu Leu Trp Ala Gln Asn	
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 gag ctg gac cag aag aaa gta aaa tat ccc aaa atg aca gac ctc agc	794
Glu Leu Asp Gln Lys Lys Val Lys Tyr Pro Lys Met Thr Asp Leu Ser	
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Lys Gly Val Ile Glu Glu Pro Lys *	
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 Met Arg Gln  
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 gac aag ctg acc ggg tct ctg agg cgc ggg ggg aga<sup>8</sup> tgc ctg aag cgg 223  
 Asp Lys Leu Thr Gly Ser Leu Arg Arg Gly Gly Arg Cys Leu Lys Arg  
 4 9 14 19  
 cag ggc ggc ggc gtg ggc acc atc ctg agc aat gtg ctc aag aag cgc 271  
 Gln Gly Gly Gly Val Gly Thr Ile Leu Ser Asn Val Leu Lys Lys Arg  
 20 25 30 35  
 agc tgc att tcc cgg acc gcg ccc cgg ctg ctg tgc acc ctg gag ccg 319  
 Ser Cys Ile Ser Arg Thr Ala Pro Arg Leu Leu Cys Thr Leu Glu Pro  
 36 41 46 51  
 gga gtt gat acc aag ttg aaa ttc act ctt gag cca tct tta ggt caa 367  
 Gly Val Asp Thr Lys Leu Lys Phe Thr Leu Glu Pro Ser Leu Gly Gln  
 52 57 62 67  
 aat ggt ttt cag cag tgg tac gat gct ctc aag gca gtt gcc agg cta 415  
 Asn Gly Phe Gln Gln Trp Tyr Asp Ala Leu Lys Ala Val Ala Arg Leu  
 68 73 78 83  
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 Ser Thr Gly Ile Pro Lys Glu Trp Arg Arg Lys Val Trp Leu Thr Leu  
 84 89 94 99  
 gca gat cat tat ttg cac agt ata gcc att gac tgg gac aaa acc atg 511  
 Ala Asp His Tyr Leu His Ser Ile Ala Ile Asp Trp Asp Lys Thr Met  
 100 105 110 115  
 cgc ttc act ttc aat gaa agg agt aat cct gat gat gac tcc atg gga 559  
 Arg Phe Thr Phe Asn Glu Arg Ser Asn Pro Asp Asp Asp Ser Met Gly  
 116 121 126 131  
 att cag ata gtc aag gac ctt cac cgc aca ggc tgt agt tct tac tgt 607  
 Ile Gln Ile Val Lys Asp Leu His Arg Thr Gly Cys Ser Ser Tyr Cys  
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 Gly Gln Glu Ala Glu Gln Asp Arg Val Val Leu Lys Arg Val Leu Leu  
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 gcc tat gcc cga tgg aac aaa act gtt ggg tac tgc caa ggc ttt aac 703  
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 164 169 174 179

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Ile Leu Ala Ala Leu Ile Leu Glu Val Met Glu Gly Asn Glu Gly Asp	
180 185 190 195	
gcc ctg aaa att atg att tac ctt att gat aag gta ctt ccc gaa agc	799
Ala Leu Lys Ile Met Ile Tyr Leu Ile Asp Lys Val Leu Pro Glu Ser	
196 201 206 211	
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Tyr Phe Val Asn Asn Leu Arg Ala Leu Ser Val Asp Met Ala Val Phe	
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Arg Asp Leu Leu Arg Met Lys Leu Pro Glu Leu Ser Gln His Leu Asp	
228 233 238 243	
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Ser Thr Met Gly Arg Leu Thr Gln Glu Met Leu Glu Asn Asp Leu Leu	
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Gln Ser His Glu Leu Met Gln Thr Val Tyr Ser Met Ala Pro Phe Pro	
340 345 350 355	
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Phe Pro Gln Leu Ala Glu Leu Arg Glu Lys Tyr Thr Tyr Asn Ile Thr	
356 361 366 371	
ccg ttc cca gcc aca gtt aaa ccc acc tca gtt tct gga cga cat agt	1327
Pro Phe Pro Ala Thr Val Lys Pro Thr Ser Val Ser Gly Arg His Ser	
372 377 382 387	
aag gcc aga gac agt gat gaa gag aat gac cca gac gat gag gat gct	1375
Lys Ala Arg Asp Ser Asp Glu Glu Asn Asp Pro Asp/Asp Glu Asp Ala	
388 393 398 403	
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Val Val Asn Ala Val Gly Cys Leu Gly Pro Phe Ser Gly Phe Leu Ala	
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Pro Glu Leu Gln Lys Tyr Gln Lys Gln Ile Lys Glu Pro Asn Glu Glu	
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Gln Ser Leu Arg Ser Asn Asn Ile Ala Glu Leu Ser Pro Gly Ala Ile	
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Glu Arg Met Thr Thr Asp Ile Asn Ala Leu Lys Arg Gln Tyr Ser Arg	
468 473 478 483	
att aaa aag aag caa cag cag cag gtt cat cag gtg tac atc agg gca	1663
Ile Lys Lys Lys Gln Gln Gln Gln Val His Gln Val Tyr Ile Arg Ala	
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Pro Val Ile Asn His Leu Leu Leu Gly Lys Lys Met Lys Met Thr Asn	
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Arg Ala Ala Lys Asn Ala Val Ile His Ile Pro Gly His Thr Gly Gly	
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Lys Ile Ser Pro Val Pro Tyr Glu Asp Leu Lys Thr Lys Leu Asn Ser	
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ccg tgg cga act cac atc cga gtc cac aaa aag aac atg cca agg acc	1903
Pro Trp Arg Thr His Ile Arg Val His Lys Lys Asn Met Pro Arg Thr	
564 569 574 579	
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Lys Ser His Pro Gly Cys Gly Asp Thr Val Gly Leu Ile Asp Glu Gln	
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Asn Glu Ala Ser Lys Thr Asn Gly Leu Gly Ala Ala Glu Ala Phe Pro	
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Asn Lys Ala Thr Ser	Lys Ala Pro Gln Gly	Ser Asn Ser Lys Thr Pro		
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Ala Arg Asn Leu Gly	Leu Tyr Gly Pro Thr	Glu Arg Thr Pro Thr Val		
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His Phe Pro Gln Met	Ser Arg Ser Phe Ser	Lys Pro Gly Gly Gly Asn		
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Ser Gly Thr Lys Lys	Arg *			
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Met Arg Gln  
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Asp Lys Leu Thr Gly Ser Leu Arg Arg Gly Gly Arg Cys Leu Lys Arg  
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Gln Gly Gly Gly Val Gly Thr Ile Leu Ser Asn Val Leu Lys Lys Arg  
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Gly Val Asp Thr Lys Leu Lys Phe Thr Leu Glu Pro Ser Leu Gly Gln  
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Ala Asp His Tyr Leu His Ser Ile Ala Ile Asp Trp Asp Lys Thr Met  
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116 121 126 131



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 Met Cys Gly Val Asn Ile Ile Cys Phe  
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 Gln Glu Ala Trp Thr Met Pro Phe Ala Phe Cys Thr Arg Glu Lys Leu  
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 Pro Trp Thr Glu Phe Ala Glu Ser Ala Glu Asp Gly Pro Thr Thr Arg  
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 His Ile Pro Arg Val Gly Asp Phe Asn Glu Ser Thr Tyr Tyr Met Glu  
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Arg Thr Pro Gly Leu Ser Arg Ser Arg Asp Gly Leu Leu Val Ala Lys				
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Leu Asp Leu Asn Leu Cys Gln Gln Val Asn Asp Val Trp Asn Phe Lys				
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tgccatctgt ctccgca   atg ccc ccc aag aaa cag gct cag gcc ggg ggc      170
                      Met Pro Pro Lys Lys Lys Gln Ala Gln Ala Gly Gly
                      1               5

agc aaa aag gcg gag caa aaa aag aag gag aag att atc gaa gac aaa      218
Ser Lys Lys Ala Glu Gln Lys Lys Lys Glu Lys Ile18 Ile Glu Asp Lys
12                17                22                27

act ttc ggt ttg aag aat aag aaa gga gca aag caa cag aag ttt atc      266
Thr Phe Gly Leu Lys Asn Lys Lys Gly Ala Lys Gln Gln Lys Phe Ile
28                33                38                43

aag gct gtc aca cat caa gtt aaa ttt ggt caa caa aat cca cgt cag      314
Lys Ala Val Thr His Gln Val Lys Phe Gly Gln Gln Asn Pro Arg Gln
44                49                54                59

gta gca cag agt gaa gct gaa aag aaa ttg aag aag gat gac aag aag      362
Val Ala Gln Ser Glu Ala Glu Lys Lys Leu Lys Lys Asp Asp Lys Lys
60                65                70                75

aaa gaa ttg cag gag cta aat gag ctg ttc aaa cct gta gtt gct gct      410
Lys Glu Leu Gln Glu Leu Asn Glu Leu Phe Lys Pro Val Val Ala Ala
76                81                86                91

caa aaa ata agt aaa ggt gca gat ccc aag tct gta gta tgt gca ttc      458
Gln Lys Ile Ser Lys Gly Ala Asp Pro Lys Ser Val Val Cys Ala Phe
92                97                102                107

ttc aag caa gga cag tgt act aaa gga gat aag tgt aag ttc tcc cat      506
Phe Lys Gln Gly Gln Cys Thr Lys Gly Asp Lys Cys Lys Phe Ser His
108               113               118               123

gac ttg act ctg gag aga aaa tgt gaa aag cga agt gtt tac att gat      554
Asp Leu Thr Leu Glu Arg Lys Cys Glu Lys Arg Ser Val Tyr Ile Asp
124               129               134               139

gca aga gat gaa gaa ctt gaa aaa gat act atg gat aat tgg gat gag      602
Ala Arg Asp Glu Glu Leu Glu Lys Asp Thr Met Asp Asn Trp Asp Glu
140               145               150               155

aaa aag ctg gaa gaa gta gtg aac aag aag cac ggt gag gcg gaa aag      650
Lys Lys Leu Glu Glu Val Val Asn Lys Lys His Gly Glu Ala Glu Lys
156               161               166               171

aaa aaa cca aaa act caa ata gtg tgc aag cat ttc ctg gaa gct att      698
Lys Lys Pro Lys Thr Gln Ile Val Cys Lys His Phe Leu Glu Ala Ile
172               177               182               187

gaa aac aac aag tat ggc tgg ttt tgg gta tgc cct gga ggg ggt gat      746
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Glu Asn Asn Lys Tyr Gly Trp Phe Trp Val Cys Pro Gly Gly Gly Asp	
188 193 198 203	
att tgc atg tat cgt cat gca ctt cct cct gga ttt gtg ttg aaa aaa	794
Ile Cys Met Tyr Arg His Ala Leu Pro Pro Gly Phe Val Leu Lys Lys	
204 209 214 219	
gat aaa aag aaa gaa gag aaa gaa gat gaa att tca tta gaa gat cta	842
Asp Lys Lys Lys Glu Glu Lys Glu Asp Glu Ile Ser Leu Glu Asp Leu	
220 225 230 235	
att gag aga gag cgt tct gcc cta ggt cca aat gtt acc aaa atc act	890
Ile Glu Arg Glu Arg Ser Ala Leu Gly Pro Asn Val Thr Lys Ile Thr	
236 241 246 251	
cta gaa tct ttt ctt gcc tgg aag aaa agg aaa aga caa gaa aag att	938
Leu Glu Ser Phe Leu Ala Trp Lys Lys Arg Lys Arg Gln Glu Lys Ile	
252 257 262 267	
gat aaa ctt gaa caa gat atg gaa aga agg aaa gct gac ttc aaa gca	986
Asp Lys Leu Glu Gln Asp Met Glu Arg Arg Lys Ala Asp Phe Lys Ala	
268 273 278 283	
ggg aaa gca cta gtg atc agt ggt cgt gaa gtg ttt gaa ttt cgt cct	1034
Gly Lys Ala Leu Val Ile Ser Gly Arg Glu Val Phe Glu Phe Arg Pro	
284 289 294 299	
gaa ctg gtc aat gat gat gat gag gaa gca gat gat acc cgc tac acc	1082
Glu Leu Val Asn Asp Asp Asp Glu Glu Ala Asp Asp Thr Arg Tyr Thr	
300 305 310 315	
cag gga aca ggt ggt gat gag gtt gat gat tca gtg agt gta aat gac	1130
Gln Gly Thr Gly Gly Asp Glu Val Asp Asp Ser Val Ser Val Asn Asp	
316 321 326 331	
ata gat tta agc ctg tac atc cca aga gat gta gat gaa aca ggt att	1178
Ile Asp Leu Ser Leu Tyr Ile Pro Arg Asp Val Asp Glu Thr Gly Ile	
332 337 342 347	
act gta gcc agt ctt gaa aga ttc agc aca tat act tca gat aaa gat	1226
Thr Val Ala Ser Leu Glu Arg Phe Ser Thr Tyr Thr Ser Asp Lys Asp	
348 353 358 363	
gaa aac aaa tta agt gaa gct tct gga ggt agg gct gaa aat ggt gaa	1274
Glu Asn Lys Leu Ser Glu Ala Ser Gly Gly Arg Ala Glu Asn Gly Glu	
364 369 374 379	
aga agt gac ttg gaa gag gac aac gag agg gag gga acg gaa aat gga	1322
Arg Ser Asp Leu Glu Glu Asp Asn Glu Arg Glu Gly Thr Glu Asn Gly	
380 385 390 395	
gcc att gat gct gtt cct gtt gat gaa aat ctt ttc act gga gag gat	1370
Ala Ile Asp Ala Val Pro Val Asp Glu Asn Leu Phe Thr Gly Glu Asp	
396 401 406 411	
ttg gat gaa cta gaa gaa gaa tta aat aca ctt gat tta gaa gaa tga	1418
Leu Asp Glu Leu Glu Glu Glu Leu Asn Thr Leu Asp Leu Glu Glu *	

412

417

422

427

caccaaacac atcgcg

1434

&lt;210&gt; 496

&lt;211&gt; 2106

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (81)..(524)

&lt;400&gt; 496

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Met Ala Glu Arg Pro Glu Asp Leu Asn Leu

1

5

ccc aat gcc gtg atc acc agg atc atc aag gag gcg ctc ccg gac ggt 158

Pro Asn Ala Val Ile Thr Arg Ile Ile Lys Glu Ala Leu Pro Asp Gly

11

16

21

26

gtc aac atc tcc aag gag gcc cgg agc gcc atc tcc cgc gcc gcc agc 206

Val Asn Ile Ser Lys Glu Ala Arg Ser Ala Ile Ser Arg Ala Ala Ser

27

32

37

42

gtc ttc gtg ctg tac gcc aca tcc tgt gct aac aac ttt gca atg aaa 254

Val Phe Val Leu Tyr Ala Thr Ser Cys Ala Asn Asn Phe Ala Met Lys

43

48

53

58

gga aag cgg aag acg ctg aat gcc agt gat gtg ctc tca gcc atg gaa 302

Gly Lys Arg Lys Thr Leu Asn Ala Ser Asp Val Leu Ser Ala Met Glu

59

64

69

74

gag atg gag ttc cag cgg ttc gtt acc cca ttg aaa gaa gct ctg gaa 350

Glu Met Glu Phe Gln Arg Phe Val Thr Pro Leu Lys Glu Ala Leu Glu

75

80

85

90

gca tat agg cgg gag cag aaa ggc aag aag gag gcc tca gag caa aag 398

Ala Tyr Arg Arg Glu Gln Lys Gly Lys Lys Glu Ala Ser Glu Gln Lys

91

96

101

106

aag aag gac aaa gac aaa aaa aca gac tcg gaa gag caa gac aag agc 446

Lys Lys Asp Lys Asp Lys Lys Thr Asp Ser Glu Glu Gln Asp Lys Ser

107

112

117

122

agg gat gag gac aat gat gaa gac gaa gaa agg ctg gaa gaa gaa gaa 494

Arg Asp Glu Asp Asn Asp Glu Asp Glu Glu Arg Leu Glu Glu Glu Glu

123

128

133

138

cag aat gaa gag gaa gaa gta tac aac tga a aagggcggga gactgtggca 545

Gln Asn Glu Glu Glu Glu Val Tyr Asn \*

139

144

ccttgaagg taccacttga aatgagacgt gctacgtgtt tctgtgaagc ttttccatgc 605  
tgggcagagt agtctcaggc aaaagtgcct gaaaagatca gaataaaaac tgactagaaa 665  
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                                         Met Leu Pro Asn Thr Gly
                                         1

agg ctg gca gga tgt aca gtt ttt atc aca ggt gca agc cgt ggc att      162
Arg Leu Ala Gly Cys Thr Val Phe Ile Thr Gly Ala Ser Arg Gly Ile
   7                12                17                22

ggc aaa gct att gca ttg aaa gca gca aag gat gga gca aat att gtt      210
Gly Lys Ala Ile Ala Leu Lys Ala Ala Lys Asp Gly Ala Asn Ile Val
  23                28                33                38

att gct gca aag acc gcc cag cca cat cca aaa ctt cta ggc aca atc      258
Ile Ala Ala Lys Thr Ala Gln Pro His Pro Lys Leu Leu Gly Thr Ile
  39                44                49                54

tat act gct gct gaa gaa att gaa gca gtt gga gga aag gcc ttg cca      306
Tyr Thr Ala Ala Glu Glu Ile Glu Ala Val Gly Gly Lys Ala Leu Pro
  55                60                65                70

tgt att gtt gat gtg aga gat gaa cag cag atc agt gct gca gtg gag      354
Cys Ile Val Asp Val Arg Asp Glu Gln Gln Ile Ser Ala Ala Val Glu
  71                76                81                86

aaa gcc atc aag aaa ttt gga gga att gat att ctg gta aat aat gcc      402
Lys Ala Ile Lys Lys Phe Gly Gly Ile Asp Ile Leu Val Asn Asn Ala
  87                92                97                102

agt gcc att agt ttg acc aat aca ttg gac aca cct acc aag aga ttg      450
Ser Ala Ile Ser Leu Thr Asn Thr Leu Asp Thr Pro Thr Lys Arg Leu
 103                108                113                118

gat ctg atg atg aac gtg aac acc aga ggc acc tac ctt gca tct aaa      498
Asp Leu Met Met Asn Val Asn Thr Arg Gly Thr Tyr Leu Ala Ser Lys
 119                124                129                134

gca tgt att cct tat ttg aaa aag agc aaa gtt gct cat atc ctc aat      546
Ala Cys Ile Pro Tyr Leu Lys Lys Ser Lys Val Ala His Ile Leu Asn
 135                140                145                150

atc agt cca cca ctg aac cta aat cca gtt tgg ttc aaa cag cac tgt      594
Ile Ser Pro Pro Leu Asn Leu Asn Pro Val Trp Phe Lys Gln His Cys
 151                156                161                166

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ggt agg tgg tag gtg gtagggtag gggatgggtt gtgcttaatt tgttttgaat 649  
 Gly Arg Trp \*  
 167

taaatctgtg tatgtctgat gtaatcacia tctgcacata acattcatca ttgaattttc 709  
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 gagttttgag aaatgtatat aaccaacacc caaatcaaga tacagatttt taccatttca 889  
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 gttgggttaa aactatctat gagatacttt atttttctta gacaggtatg cacctgtagt 1009  
 cctagctact tgaaaggctg aggtgggagg atcgcttgag cccaggagt tggaggctgca 1069  
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 aaaaaaaaaa a 1140

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 aagccctctt caaggagcat gagctgaaat tgctaaactt tgggagtttt ccgtgacacc 180  
 cttcaaagtg ctacagggtg ggcattggatc agctggggag ggttgatgtg gttttgccct 240  
 gtgggggtatc tatctgtgta cttttgtctg agggaggcaa ctggggccac ttaggccggc 300  
 aggtgcccac tgtgattggg tgacatgata ccaagcaaca ggatcatcca gtcaccttca 360  
 atgcaggag gatggctgac aggtccctg ggtgacactt catgcaatca gatgtcgagt 420  
 tggactgtga catagagcca tgtggccaca ctaaattccc cccaccctt cccctgtcca 480  
 caaccgtcat tgtctgttct tgccatccag tggccactgc ctccaccatg gctgaggett 540  
 tctctaagac aacctctgag gaagaccaga gcattccagga gcccaaagag gccaaactcca 600  
 tgacggccca gaagcagaag aagtgagggc ttccagggtc ccgtaggcgc catgccaaca 660

Year	Age	Sex	Weight (kg)	Length (cm)	Condition	Notes
1958	10	M	10.5	110	Good	
1959	11	F	11.0	115	Good	
1960	12	M	12.0	120	Good	
1961	13	F	13.0	125	Good	
1962	14	M	14.0	130	Good	
1963	15	F	15.0	135	Good	
1964	16	M	16.0	140	Good	
1965	17	F	17.0	145	Good	
1966	18	M	18.0	150	Good	
1967	19	F	19.0	155	Good	
1968	20	M	20.0	160	Good	
1969	21	F	21.0	165	Good	
1970	22	M	22.0	170	Good	
1971	23	F	23.0	175	Good	
1972	24	M	24.0	180	Good	
1973	25	F	25.0	185	Good	
1974	26	M	26.0	190	Good	
1975	27	F	27.0	195	Good	
1976	28	M	28.0	200	Good	
1977	29	F	29.0	205	Good	
1978	30	M	30.0	210	Good	
1979	31	F	31.0	215	Good	
1980	32	M	32.0	220	Good	
1981	33	F	33.0	225	Good	
1982	34	M	34.0	230	Good	
1983	35	F	35.0	235	Good	
1984	36	M	36.0	240	Good	
1985	37	F	37.0	245	Good	
1986	38	M	38.0	250	Good	
1987	39	F	39.0	255	Good	
1988	40	M	40.0	260	Good	
1989	41	F	41.0	265	Good	
1990	42	M	42.0	270	Good	
1991	43	F	43.0	275	Good	
1992	44	M	44.0	280	Good	
1993	45	F	45.0	285	Good	
1994	46	M	46.0	290	Good	
1995	47	F	47.0	295	Good	
1996	48	M	48.0	300	Good	
1997	49	F	49.0	305	Good	
1998	50	M	50.0	310	Good	
1999	51	F	51.0	315	Good	
2000	52	M	52.0	320	Good	
2001	53	F	53.0	325	Good	
2002	54	M	54.0	330	Good	
2003	55	F	55.0	335	Good	
2004	56	M	56.0	340	Good	
2005	57	F	57.0	345	Good	
2006	58	M	58.0	350	Good	
2007	59	F	59.0	355	Good	
2008	60	M	60.0	360	Good	
2009	61	F	61.0	365	Good	
2010	62	M	62.0	370	Good	
2011	63	F	63.0	375	Good	
2012	64	M	64.0	380	Good	
2013	65	F	65.0	385	Good	
2014	66	M	66.0	390	Good	
2015	67	F	67.0	395	Good	
2016	68	M	68.0	400	Good	
2017	69	F	69.0	405	Good	
2018	70	M	70.0	410	Good	
2019	71	F	71.0	415	Good	
2020	72	M	72.0	420	Good	
2021	73	F	73.0	425	Good	
2022	74	M	74.0	430	Good	

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1718





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163 168 173 178	
atg tgc gag gcc aag ccc cac ctc atc aca cac ggc ttc tcc tcc cgc	1291
Met Ser Glu Ala Lys Pro His Leu Ile Thr His Gly Phe Ser Ser Arg	
179 184 189 194	
ctg ggc aag cgg gtc tct gac atc ctc cga tac cta ttt ccc gtg ccc	1339
Leu Gly Lys Arg Val Ser Asp Ile Leu Arg Tyr Leu Phe Pro Val Pro	
195 200 205 210	
aaa gat gac agc cac cgg gtc atc acc ttc gca aac cag gac gac tac	1387
Lys Asp Asp Ser His Arg Val Ile Thr Phe Ala Asn Gln Asp Asp Tyr	
211 216 221 226	
ata tca ttc cgg cac cat gtg tat aag aag aca gac cac cgc aac gtg	1435
Ile Ser Phe Arg His His Val Tyr Lys Lys Thr Asp His Arg Asn Val	
227 232 237 242	
gag ctc act gag gtc ggg ccc cgc ttt gag ctg aag ctg tac atg atc	1483
Glu Leu Thr Glu Val Gly Pro Arg Phe Glu Leu Lys Leu Tyr Met Ile	
243 248 253 258	
cgt ctg ggc acg ctg gag cag gag gcc aca gca gac gtg gag tgg cgc	1531
Arg Leu Gly Thr Leu Glu Gln Glu Ala Thr Ala Asp Val Glu Trp Arg	
259 264 269 274	
tgg cac cct tac acc aat acc gca cgc aag aga gtc ttc ctg agc acc	1579
Trp His Pro Tyr Thr Asn Thr Ala Arg Lys Arg Val Phe Leu Ser Thr	
275 280 285 290	
gag tga gcacactcac cactcagtca ggacatggac ttggaactca ggatggggct	1635
Glu *	
291	
gtcatagaca gacccaccag taggaactgt cacagaatgg cctgctgaac tgggatgtgg	1695
aactgtggcg ggtggagagg tctgaataaa ccgtctgtgt catggcaaaa aaaaaa	1751

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ogcaccaggc agtncctagt ggagagaggc cctac atg tgt gtt gag tgt ggg 173  
Met Cys Val Glu Cys Gly  
1  
aag tgc ttt ggc cgg agt tcc cac ctc ctt cag cat cag cgt atc cac 221  
Lys Cys Phe Gly Arg Ser Ser His Leu Leu Gln His Gln Arg Ile His  
7 12 17 22  
act gga gag aag ccc tat gtg tgc agt gta tgt ggg aag gcc ttc agc 269  
Thr Gly Glu Lys Pro Tyr Val Cys Ser Val Cys Gly Lys Ala Phe Ser  
23 28 33 38  
cag agc tca gtc ctt agt aaa cac agg aga att cac aca ggt gag aag 317  
Gln Ser Ser Val Leu Ser Lys His Arg Arg Ile His Thr Gly Glu Lys  
39 44 49 54  
ccc tat gag tgt aat gag tgt gga aaa gcc ttt aga gtg agc tca gat 365  
Pro Tyr Glu Cys Asn Glu Cys Gly Lys Ala Phe Arg Val Ser Ser Asp  
55 60 65 70  
ctt gct cag cat cac aag ata cat aca gga gag aag cct cac gaa tgt 413  
Leu Ala Gln His His Lys Ile His Thr Gly Glu Lys Pro His Glu Cys  
71 76 81 86  
ctt gag tgt cgg aaa gcc ttc act caa ctc tca cat ctc att cag cac 461  
Leu Glu Cys Arg Lys Ala Phe Thr Gln Leu Ser His Leu Ile Gln His  
87 92 97 102  
cag cgg atc cac acg gga gaa agg cca tat gtg tgt ccg ttg tgt ggg 509  
Gln Arg Ile His Thr Gly Glu Arg Pro Tyr Val Cys Pro Leu Cys Gly  
103 108 113 118  
aaa gcc ttc aac cat agc act gtt ctg cgg agc cac cag agg gta cac 557  
Lys Ala Phe Asn His Ser Thr Val Leu Arg Ser His Gln Arg Val His  
119 124 129 134  
act ggg gag aag cct cac agg tgc aat gag tgt ggg aaa acc ttc agt 605  
Thr Gly Glu Lys Pro His Arg Cys Asn Glu Cys Gly Lys Thr Phe Ser  
135 140 145 150  
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Val Lys Arg Thr Leu Leu Gln His Gln Arg Ile His Thr Gly Glu Lys  
151 156 161 166  
ccc tac acg tgc agc gag tgt ggg aag gcc ttc agc gac cgc tca gtc 701  
Pro Tyr Thr Cys Ser Glu Cys Gly Lys Ala Phe Ser Asp Arg Ser Val  
167 172 177 182  
ctc att cag cac cac aac gtg cac acc ggg gag aag ccc tat gag tgc 749  
Leu Ile Gln His His Asn Val His Thr Gly Glu Lys Pro Tyr Glu Cys  
183 188 193 198

agt gag tgt ggg aag acc ttc agc cac cgc tcc aca ctg atg aat cac 797  
 Ser Glu Cys Gly Lys Thr Phe Ser His Arg Ser Thr Leu Met Asn His  
 199 204 209 214

gag cgg atc cac acc gag gaa aag ccc tat gca tgc tac gaa tgt ggg 845  
 Glu Arg Ile His Thr Glu Glu Lys Pro Tyr Ala Cys Tyr Glu Cys Gly  
 215 220 225 230

aag gcc ttc gtt cag cac tca cac ctg atc cag cac cag aaa gtg cac 893  
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 231 236 241 246

aga aag ttg tga ccc atggctgaca caagaatcca ttctgacaga aactgcatgt 948  
 Arg Lys Leu \*  
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gaggttgagg cctacagcgg ggaaaggact tgccagattt tcgccgcaag tcagggccat 120

agcggggggc ataacaaggc ctcccaaccg aacgtcaagc aagagctccg agcgtccac 180

acaagtcccg aacgactcgt tgacgcgcgc ctactgaagg cgcctggggt cccggactcg 240

gccaccgcct cgccgcttcc gccoctcaga agcatggccg ccacgtagcc cggcccggat 300

tggacgttgg cgggtggacgc aaaccagttg gcaacacgat tggctgctgc ggggtgatga 360

cgtcaggggg cgggtgtcga gtgaatgggg gcagcatgag gccgggcggc ttttttgggc 420

gccggacagc ggctgagtag agcc atg agc cga tgt gtt ttg gag cct cgc 471  
 Met Ser Arg Cys Val Leu Glu Pro Arg  
 1 5

ccc ccg ggg aag cgg tgg atg gtg gct ggc ctg ggg aat ccc gga ctg 519  
 Pro Pro Gly Lys Arg Trp Met Val Ala Gly Leu Gly Asn Pro Gly Leu  
 10 15 20 25

ccc ggc acg cga cac agc gtg ggc atg gcg gtg ctg ggg cag ctg gcg 567  
 Pro Gly Thr Arg His Ser Val Gly Met Ala Val Leu Gly Gln Leu Ala

26	31	36	41	
cgg cgg ctg ggt gtg gcg gag agt tgg acg cgc gac cgg cac tgt gcc				615
Arg Arg Leu Gly Val Ala Glu Ser Trp Thr Arg Asp Arg His Cys Ala				
42	47	52	57	
gcc gac ctc gcc ctg gcc ccg ctg ggg gat gcc caa ctg gtc ctg ctc				663
Ala Asp Leu Ala Leu Ala Pro Leu Gly Asp Ala Gln Leu Val Leu Leu				
58	63	68	73	
cgg cca cgg cgg ctt atg aac gcc aac ggg cgc agc gtg gcc cgg gct				711
Arg Pro Arg Arg Leu Met Asn Ala Asn Gly Arg Ser Val Ala Arg Ala				
74	79	84	89	
gcg gag ctg ttt ggg ctg act gcc gag gaa gtc tac ctg gtg cat gat				759
Ala Glu Leu Phe Gly Leu Thr Ala Glu Glu Val Tyr Leu Val His Asp				
90	95	100	105	
gag ctg gac aag ccc ctg ggg aga ctg gct ctg aag ctg ggg ggc agt				807
Glu Leu Asp Lys Pro Leu Gly Arg Leu Ala Leu Lys Leu Gly Gly Ser				
106	111	116	121	
gcc agg ggc cac aat gga gtc cgt tcc tgc att agc tgc ctc aac tcc				855
Ala Arg Gly His Asn Gly Val Arg Ser Cys Ile Ser Cys Leu Asn Ser				
122	127	132	137	
aat gca atg cca agg ctg cgg gtg ggt atc ggg cgc ccg gcg cac cct				903
Asn Ala Met Pro Arg Leu Arg Val Gly Ile Gly Arg Pro Ala His Pro				
138	143	148	153	
gag gcg gtt cag gcc cat gtg ctg ggc tgc ttc tcc cct gct gag cag				951
Glu Ala Val Gln Ala His Val Leu Gly Cys Phe Ser Pro Ala Glu Gln				
154	159	164	169	
gag ctg ctg cct ctg ttg ctg gat cga gcc acc gac ctg atc ttg gac				999
Glu Leu Leu Pro Leu Leu Leu Asp Arg Ala Thr Asp Leu Ile Leu Asp				
170	175	180	185	
cac atc cgt gag cga agc cag ggg ccc tca ctg ggg ccg tga cactagt				1048
His Ile Arg Glu Arg Ser Gln Gly Pro Ser Leu Gly Pro *				
186	191	196		
ggccatggct gcttgctga ctgtagtgcc caccaaccca gccactgcca cagagctgcc				1108
acgccagcct tggatatctac tttttataca aatctcctct agactgttcc aggctgcctg				1168
cggattaaag tgggggtgac tgtgaaaaaa aaaaaa				1204

<210> 502  
 <211> 2208  
 <212> DNA  
 <213> Homo sapiens  
 <220>

<221> CDS

<222> (88)..(1956)

<400> 502

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gcggggcgccg cgggacctct ccggggcc atg gca gcc cct gtc aaa ggg aac 111  
Met Ala Ala Pro Val Lys Gly Asn  
1 5

agg aag cag tcc acg gag ggt gac gcc cta gac cca cct gca tcc ccc 159  
Arg Lys Gln Ser Thr Glu Gly Asp Ala Leu Asp Pro Pro Ala Ser Pro  
9 14 19 24

aaa cct gct ggc aag cag aac gga atc cag aac ccc atc tcg ctg gag 207  
Lys Pro Ala Gly Lys Gln Asn Gly Ile Gln Asn Pro Ile Ser Leu Glu  
25 30 35 40

gac tcc ccc gag gca ggc ggg gag cgg gag gag gag cag gag cgg gag 255  
Asp Ser Pro Glu Ala Gly Gly Glu Arg Glu Glu Glu Gln Glu Arg Glu  
41 46 51 56

gag gag cag gcc ttc ctg gtc agc ctc tac aag ttc atg aag gag cga 303  
Glu Glu Gln Ala Phe Leu Val Ser Leu Tyr Lys Phe Met Lys Glu Arg  
57 62 67 72

cac acg ccc atc gag agg gtg ccc cat ctc ggc ttc aag cag att aac 351  
His Thr Pro Ile Glu Arg Val Pro His Leu Gly Phe Lys Gln Ile Asn  
73 78 83 88

ctg tgg aag atc tac aaa gca gtg gag aag ctg ggg gcc tat gag ctg 399  
Leu Trp Lys Ile Tyr Lys Ala Val Glu Lys Leu Gly Ala Tyr Glu Leu  
89 94 99 104

gtg acc ggg cgc cgc ctc tgg aag aac gtg tac gac gag ctg ggg ggc 447  
Val Thr Gly Arg Arg Leu Trp Lys Asn Val Tyr Asp Glu Leu Gly Gly  
105 110 115 120

agc cca ggc agc acc agc gcg gcc acg tgc acg cgc cgc cac tac gag 495  
Ser Pro Gly Ser Thr Ser Ala Ala Thr Cys Thr Arg Arg His Tyr Glu  
121 126 131 136

agg ctg gtc ctg cca tac gtg cgg cac ctg aag ggg gag gat gac aag 543  
Arg Leu Val Leu Pro Tyr Val Arg His Leu Lys Gly Glu Asp Asp Lys  
137 142 147 152

ccg ctg ccc acc tcc aag ccc agg aaa cag tac aag atg gct aag gag 591  
Pro Leu Pro Thr Ser Lys Pro Arg Lys Gln Tyr Lys Met Ala Lys Glu  
153 158 163 168

aac agg ggg gat gat ggg gcc acc gag agg ccg aag aag gcc aag gag 639  
Asn Arg Gly Asp Asp Gly Ala Thr Glu Arg Pro Lys Lys Ala Lys Glu  
169 174 179 184

gag cgg cgc atg gac cag atg atg cca gga aag acc aaa gca gat gct 687  
Glu Arg Arg Met Asp Gln Met Met Pro Gly Lys Thr Lys Ala Asp Ala  
185 190 195 200

gct gac cca gca cca ctt ccc agc cag gag ccc ccc agg aac agc aca	735
Ala Asp Pro Ala Pro Leu Pro Ser Gln Glu Pro Pro Arg Asn Ser Thr	
201 206 211 216	
gaa cag cag ggc ctg gcc tct ggg tct tct gtg tcc ttt gtg ggt gcc	783
Glu Gln Gln Gly Leu Ala Ser Gly Ser Ser Val Ser Phe Val Gly Ala	
217 222 227 232	
agc ggc tgt cct gag gcc tac aag cgg ctc cta tcc agc ttc tac tgc	831
Ser Gly Cys Pro Glu Ala Tyr Lys Arg Leu Leu Ser Ser Phe Tyr Cys	
233 238 243 248	
aag ggg aca cac ggc atc atg tca cca ctg gcc aaa aag aag ctc ctg	879
Lys Gly Thr His Gly Ile Met Ser Pro Leu Ala Lys Lys Lys Leu Leu	
249 254 259 264	
gcc cag gtg agc aag gtg gag gcc ttg cag tgc cag gag gag ggc tgc	927
Ala Gln Val Ser Lys Val Glu Ala Leu Gln Cys Gln Glu Glu Gly Cys	
265 270 275 280	
cgc cat ggg gca gag ccc cag gcg tcc cca gct gtt cac ctc cca gag	975
Arg His Gly Ala Glu Pro Gln Ala Ser Pro Ala Val His Leu Pro Glu	
281 286 291 296	
agt ccc cag agc ccc aaa ggg ctg act gag aac tcc agg cac cgg ctg	1023
Ser Pro Gln Ser Pro Lys Gly Leu Thr Glu Asn Ser Arg His Arg Leu	
297 302 307 312	
acc cct cag gag gga ttg cag gcc cca ggt ggc agc ctc aga gag gag	1071
Thr Pro Gln Glu Gly Leu Gln Ala Pro Gly Gly Ser Leu Arg Glu Glu	
313 318 323 328	
gcg cag gca ggc ccc tgc ccg gca gcc ccc atc ttc aag ggc tgc ttc	1119
Ala Gln Ala Gly Pro Cys Pro Ala Ala Pro Ile Phe Lys Gly Cys Phe	
329 334 339 344	
tac acc cac ccc acc gag gtg ctg aag cct gtc agc cag cac ccc agg	1167
Tyr Thr His Pro Thr Glu Val Leu Lys Pro Val Ser Gln His Pro Arg	
345 350 355 360	
gac ttc ttc tct aga ctt aaa gat ggg gtg cta ttg ggg cct cct ggc	1215
Asp Phe Phe Ser Arg Leu Lys Asp Gly Val Leu Leu Gly Pro Pro Gly	
361 366 371 376	
aaa gag ggg ctg tca gtg aaa gag ccc cag ctg gtg tgg ggc gga gac	1263
Lys Glu Gly Leu Ser Val Lys Glu Pro Gln Leu Val Trp Gly Gly Asp	
377 382 387 392	
gct aac cgc cct tct gcg ttc cat aaa ggt ggc tcc aga aag ggc atc	1311
Ala Asn Arg Pro Ser Ala Phe His Lys Gly Gly Ser Arg Lys Gly Ile	
393 398 403 408	
ctc tac ccc aag ccc aaa gcc tgc tgg gtg tcc ccc atg gcc aag gtc	1359
Leu Tyr Pro Lys Pro Lys Ala Cys Trp Val Ser Pro Met Ala Lys Val	
409 414 419 424	

cca gcc gag agc ccc acg ctc ccg ccc acc ttc ccc agt agc cca ggc	1407
Pro Ala Glu Ser Pro Thr Leu Pro Pro Thr Phe Pro Ser Ser Pro Gly	
425 430 435 440	
ctg ggc agc aag cgc agc ctg gag gaa gag ggt gct gcc cac agt ggg	1455
Leu Gly Ser Lys Arg Ser Leu Glu Glu Glu Gly Ala Ala His Ser Gly	
441 446 451 456	
aag aga ctg cgg gcc gtg tct ccc ttt ctt aag gag gcg gat gcc aag	1503
Lys Arg Leu Arg Ala Val Ser Pro Phe Leu Lys Glu Ala Asp Ala Lys	
457 462 467 472	
aag tgt ggg gcc aaa cct gca ggg tcc ggc ctg gtc tcc tgc ctt ctg	1551
Lys Cys Gly Ala Lys Pro Ala Gly Ser Gly Leu Val Ser Cys Leu Leu	
473 478 483 488	
ggc cca gcc ctg ggg cct gtg ccc cca gag gcc tac agg ggc acc atg	1599
Gly Pro Ala Leu Gly Pro Val Pro Pro Glu Ala Tyr Arg Gly Thr Met	
489 494 499 504	
ctg cac tgc ccg ctg aac ttc act ggc acc ccg ggc ccc ttg aag ggc	1647
Leu His Cys Pro Leu Asn Phe Thr Gly Thr Pro Gly Pro Leu Lys Gly	
505 510 515 520	
cag gct gca ctc ccc ttc agc ccc ctg gtc atc ccg gcc ttc ccg gcc	1695
Gln Ala Ala Leu Pro Phe Ser Pro Leu Val Ile Pro Ala Phe Pro Ala	
521 526 531 536	
cac ttc ctg gcc acc gca ggg ccc ctc gcc cat ggc cgc tgg cct gat	1743
His Phe Leu Ala Thr Ala Gly Pro Leu Ala His Gly Arg Trp Pro Asp	
537 542 547 552	
gca ctt ccc ccc aac gtc ctt cga cag tgc cct ccg cca cag act ttg	1791
Ala Leu Pro Pro Asn Val Leu Arg Gln Cys Pro Pro Pro Gln Thr Leu	
553 558 563 568	
ccc ggc ctc atc tgc ctg gca cgc acc acc agt cac aac cta tgc agc	1839
Pro Gly Leu Ile Cys Leu Ala Arg Thr Thr Ser His Asn Leu Cys Ser	
569 574 579 584	
gcc cca ctt ctt cca cct caa cac caa gct gta ggc cag ccc atg gtg	1887
Ala Pro Leu Leu Pro Pro Gln His Gln Ala Val Gly Gln Pro Met Val	
585 590 595 600	
ttg tgt aca ctg tgg agt cga cag ggg cct aca aca ggc agg tac tgc	1935
Leu Cys Thr Leu Trp Ser Arg Gln Gly Pro Thr Thr Gly Arg Tyr Cys	
601 606 611 616	
tgc cag ggg gct ctg aac tag tg cctgctaccc aggacaccg ggccatgcc	1988
Cys Gln Gly Ala Leu Asn *	
617 622	
ctggctgggc agcctggcac aagtgaagaa gaaggcagtg ggaaaactgg gtttatctca	2048
aggcagcagc ctgagcccag gagcagagga ccagttgtt ataaggcgct gggagaggat	2108
gggcagctcc cactgcccc gagcggagct cgaagcacc aggttgccca cggaatatcc	2168



aataaaaaga caccagtgtg aatccaaaaa aaaaaaaaaa

2208

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<211> 1282  
<212> DNA  
<213> Homo sapiens

<220>  
<221> CDS  
<222> (266)..(793)

<400> 503

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tacatatctc gcagccaggc gggtcctggg agaggcgcga gccaggcctg gtcggcgccc	180
gcggagaaaa gaagcagtca agcccatgaa ctacaacccc ggttgccgct ttctcctctc	240
ctaaccgtta agtgcgctaa gggcc atg gct gag gtg cac gtg atc ggg cag	292
Met Ala Glu Val His Val Ile Gly Gln	
1 5	
atc ata ggg gcc agc ggt ttc tcg gaa agt agc ctc ttc tgc aag tgg	340
Ile Ile Gly Ala Ser Gly Phe Ser Glu Ser Ser Leu Phe Cys Lys Trp	
10 15 20 25	
ggc att cac aca ggg gcg gca tgg aag ctc ctg tca ggc gtg cgg gag	388
Gly Ile His Thr Gly Ala Ala Trp Lys Leu Leu Ser Gly Val Arg Glu	
26 31 36 41	
ggc caa acg caa gtg gac acc ccg cag ata ggg gac atg gct tac tgg	436
Gly Gln Thr Gln Val Asp Thr Pro Gln Ile Gly Asp Met Ala Tyr Trp	
42 47 52 57	
tcc cac ccc atc gac ctg cac ttc gcc acc aaa ggt ctt caa ggc tgg	484
Ser His Pro Ile Asp Leu His Phe Ala Thr Lys Gly Leu Gln Gly Trp	
58 63 68 73	
ccc cgg ctc cat ttc cag gtg tgg tcc cag gac agc ttt ggc cgc tgc	532
Pro Arg Leu His Phe Gln Val Trp Ser Gln Asp Ser Phe Gly Arg Cys	
74 79 84 89	
cag ctt gca ggc tat gga ttt tgc cat gtg ccc agt agc ccg ggc acc	580
Gln Leu Ala Gly Tyr Gly Phe Cys His Val Pro Ser Ser Pro Gly Thr	
90 95 100 105	
cac cag ctg gcc tgc ccc acg tgg cgg ccc ctg ggc agt tgg cga gaa	628
His Gln Leu Ala Cys Pro Thr Trp Arg Pro Leu Gly Ser Trp Arg Glu	
106 111 116 121	
cag ttg gca cgg gct ttc gtg ggt ggt ggg ccg cag ctg ctg cat ggg	676

Gln	Leu	Ala	Arg	Ala	Phe	Val	Gly	Gly	Gly	Pro	Gln	Leu	Leu	His	Gly	
122					127					132					137	

gac	acc	atc	tac	agt	ggg	gcc	gac	cgc	tat	cgc	ctg	cac	aca	gct	gct	724
Asp	Thr	Ile	Tyr	Ser	Gly	Ala	Asp	Arg	Tyr	Arg	Leu	His	Thr	Ala	Ala	
138					143					148					153	

ggc	acc	gtg	cac	ctg	gag	atc	ggc	ctg	ctg	ctc	cgc	aac	ttc	gac	772	
Gly	Gly	Thr	Val	His	Leu	Glu	Ile	Gly	Leu	Leu	Leu	Arg	Asn	Phe	Asp	
154					159					164					169	

cgc	tac	ggc	gtg	gag	tgc	tga	gg	gactctgcct	ccaacatcac	caccatccac	825
Arg	Tyr	Gly	Val	Glu	Cys	*					
170					175						

accccgagaca	cccagtgatg	ggggaggatg	gcacagtggt	caagagcaca	gactctagag	885
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actgtcagag	ctgaccccag	ctaaggcatg	gcaccgcttc	tgtcctttct	aggacctcgg	945
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ggcctctctg	ggcccagttt	ccctatctgt	aaattgggga	cagtaaatgt	atgggggtcgc	1005
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agggtgttga	gtgacaggag	gctgcttagc	cacatgggag	gtgctcagta	aaggagagca	1065
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attctttacag	gtgtctgcct	cctgaccttc	ccatccttca	ggtgtcctgt	tgccccctcc	1125
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tcccaactgac	accctccgga	ggcccccatg	ttgacagacc	ctctttctcct	accttggttc	1185
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ccagcctgac	tctccttcgg	ttctgggtcc	ccctcatctg	gtcggctccc	ctgtgtctca	1245
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tcccccgacg	aaatcgtcga	cccgggacac	gatggcc	1282
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<210> 504  
 <211> 400  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> CDS  
 <222> (223)..(399)

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aagcgtcagc	cacacaaaag cctgcgtgac cgctgcttcg gagaagctct cgaccctaac	120
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tgacgtcact	gttacttggga tcagatcaag cgcagagact ttttgggatc cagtgggttat	180
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tctccacact	tcggagccat ttcaaccaac tctgagcaca aa	atg cag cca tcc	234
		Met Gln Pro Ser	
		1	

tct	atg	cag	cag	gcc	ctg	ccc	agt	cag	cga	ccc	tac	tgg	aca	gat	cca	282
Ser	Met	Gln	Gln	Ala	Leu	Pro	Ser	Gln	Arg	Pro	Tyr	Trp	Thr	Asp	Pro	
5					10					15					20	

agg cca gcc ctg gtt ccc tgc tgc agc cac cgt cct gac gtt cat egg 330  
 Arg Pro Ala Leu Val Pro Cys Cys Ser His Arg Pro Asp Val His Arg  
 21 26 31 36

agc agg ccg ggg cct ggc ctt ccc ggc aca gga ggc tgt tct gac agg 378  
 Ser Arg Pro Gly Pro Gly Leu Pro Gly Thr Gly Gly Cys Ser Asp Arg  
 37 42 47 52

ccc cca gct tgt ccc atc tga t 400  
 Pro Pro Ala Cys Pro Ile \*  
 53 58

<210> 505  
 <211> 1025  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> CDS  
 <222> (77) .. (775)

<400> 505  
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gcggggccggg acgggc atg gcc ctg ctg ctg tgc ctg gtg tgc ctg acg 109  
 Met Ala Leu Leu Leu Cys Leu Val Cys Leu Thr  
 1 5

gcg gcg ctg gcc cac ggc tgt ctg cac tgc cac agc aac ttc tcc aag 157  
 Ala Ala Leu Ala His Gly Cys Leu His Cys His Ser Asn Phe Ser Lys  
 12 17 22 27

aag ttc tcc ttc tac cgc cac cat gtg aac ttc aag tcc tgg tgg gtg 205  
 Lys Phe Ser Phe Tyr Arg His His Val Asn Phe Lys Ser Trp Trp Val  
 28 33 38 43

ggc gac atc ccc gtg tca ggg gcg ctg ctc acc gac tgg agc gac gac 253  
 Gly Asp Ile Pro Val Ser Gly Ala Leu Leu Thr Asp Trp Ser Asp Asp  
 44 49 54 59

acg atg aag gag ctg cac ctg gcc atc ccc gcc aag atc acc cgg gag 301  
 Thr Met Lys Glu Leu His Leu Ala Ile Pro Ala Lys Ile Thr Arg Glu  
 60 65 70 75

aag ctg gac caa gtg gcg aca gca gtg tac cag atg atg gat cag ctg 349  
 Lys Leu Asp Gln Val Ala Thr Ala Val Tyr Gln Met Met Asp Gln Leu  
 76 81 86 91

tac cag ggg aag atg tac ttc ccc ggg tat ttc ccc aac gag ctg cga 397  
 Tyr Gln Gly Lys Met Tyr Phe Pro Gly Tyr Phe Pro Asn Glu Leu Arg  
 92 97 102 107

aac atc ttc cgg gag cag gtg cac ctc atc cag aac gcc atc atc gaa	445
Asn Ile Phe Arg Glu Gln Val His Leu Ile Gln Asn Ala Ile Ile Glu	
108 113 118 123	
agc cgc atc gac tgt cag cac cgc tgt ggc atc ttc cag tac gag acc	493
Ser Arg Ile Asp Cys Gln His Arg Cys Gly Ile Phe Gln Tyr Glu Thr	
124 129 134 139	
atc tcc tgc aac aac tgc aca gac tcg cac gtc gcc tgc ttt ggc tat	541
Ile Ser Cys Asn Asn Cys Thr Asp Ser His Val Ala Cys Phe Gly Tyr	
140 145 150 155	
aac tgc gag tcc tcg gcg cag tgg aag tca gct gtc cag ggc ctc ctg	589
Asn Cys Glu Ser Ser Ala Gln Trp Lys Ser Ala Val Gln Gly Leu Leu	
156 161 166 171	
aac tac ata aat aac tgg cac aaa cag gac acg agc atg aga cca cgc	637
Asn Tyr Ile Asn Asn Trp His Lys Gln Asp Thr Ser Met Arg Pro Arg	
172 177 182 187	
tcc tct gcc ttc tcc tgg cct ggg aca cac aga gcc acc ccg gcc ttc	685
Ser Ser Ala Phe Ser Trp Pro Gly Thr His Arg Ala Thr Pro Ala Phe	
188 193 198 203	
ctg gta tcg cca gcc tta agg tgt ctg gag ccc cca cac ttg gcc aac	733
Leu Val Ser Pro Ala Leu Arg Cys Leu Glu Pro Pro His Leu Ala Asn	
204 209 214 219	
ctg acc ttg gaa gat gct gct gag tgt ctc aag cag cac tga cagcagc	782
Leu Thr Leu Glu Asp Ala Ala Glu Cys Leu Lys Gln His *	
220 225 230	
tgggcctgcc ccagggcaac gtgggggcgg agactcagct ggacagcccc tgccctgtcac	842
tctggagctg ggctgctgct gcctcaggac cccctctccg accccggaca gagctgagct	902
ggccaggggcc aggagggcgg gagggagggga atgggggtgg gctgtgcgca gcatcagcgc	962
ctgggcaggt ccgcagagct gcgggatgtg attaaagtcc ctgatgtttc aaaaaaaaaa	1022
aaa	1025

<210> 506  
 <211> 649  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> CDS  
 <222> (130)..(516)

<400> 506	
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ccgggtcgtc tactactact aaattcgcg cgggtcgacg tgtgctgttg aaggggggag 120

actagagaa atg gca ggg aac ctc tta tcc ggg gca ggt agg cgc ctg 168  
Met Ala Gly Asn Leu Leu Ser Gly Ala Gly Arg Arg Leu  
1 5 10

tgg gac tgg gtg cct ctg gcg tgc aga agc ttc tct ctt ggt gtg cct 216  
Trp Asp Trp Val Pro Leu Ala Cys Arg Ser Phe Ser Leu Gly Val Pro  
14 19 24 29

aga ttg atc ggt ata agg ctc act ctc ccg ccc ccc aaa gtg gtt gat 264  
Arg Leu Ile Gly Ile Arg Leu Thr Leu Pro Pro Pro Lys Val Val Asp  
30 35 40 45

cgt tgg aac gag aaa agg gcc atg ttc gga gtg tat gac aac atc ggg 312  
Arg Trp Asn Glu Lys Arg Ala Met Phe Gly Val Tyr Asp Asn Ile Gly  
46 51 56 61

atc ctg gga aac ttt gaa aag cac ccc aaa gaa ctg atc agg ggg ccc 360  
Ile Leu Gly Asn Phe Glu Lys His Pro Lys Glu Leu Ile Arg Gly Pro  
62 67 72 77

ata tgg ctt cga ggt tgg aaa ggg aat gaa ttg caa cgt tgt atc cga 408  
Ile Trp Leu Arg Gly Trp Lys Gly Asn Glu Leu Gln Arg Cys Ile Arg  
78 83 88 93

aag agg aaa atg gtt gga agt aga ata ttc gct gat gac ctg cac aac 456  
Lys Arg Lys Met Val Gly Ser Arg Ile Phe Ala Asp Asp Leu His Asn  
94 99 104 109

ctt aat aaa cgc atc cgc tat ctc tac aaa cac ttt aac cga cat ggg 504  
Leu Asn Lys Arg Ile Arg Tyr Leu Tyr Lys His Phe Asn Arg His Gly  
110 115 120 125

aag ttt cga tag aag agaaagctga gaacttcgga aaaggctcat ctgtcaccct 559  
Lys Phe Arg \*  
126

ggagaaggga aactgtactt ttccctgtga ggaaacggct ttgtattttc tctgtaataa 619

aatggggcct ctttggaataa aaaaaaaaaa 649

<210> 507  
<211> 1861  
<212> DNA  
<213> Homo sapiens

<220>  
<221> CDS  
<222> (186)..(1832)

<400> 507  
ggaactccct gtattgagga agaaattaga ctagttggct tcaaagatct aggggaatga 60



Thr Val Tyr Val Thr	Asp Cys Arg Val Ser Thr Ser Ala Phe Ser Lys	
207	212 217 222	
gcc ggc atg tgc ctt cgc tgc tca gcc tgt gcc ttg aac tcg gtg gtg		899
Ala Gly Met Cys Leu Arg Cys Ser Ala Cys Ala Leu Asn Ser Val Val		
223	228 233 238	
cag agc gtg ctg agc aag cgg aca ctg cag gcc cgc agc atg cac gag		947
Gln Ser Val Leu Ser Lys Arg Thr Leu Gln Ala Arg Ser Met His Glu		
239	244 249 254	
gtc atc gag ctg ctc aac gtg tgc gag gac ctg gcg ggc tcc acg ggc		995
Val Ile Glu Leu Leu Asn Val Cys Glu Asp Leu Ala Gly Ser Thr Gly		
255	260 265 270	
ctg gcc aag gag acc ttc ggg tcg ctg gag gag acg tct cca cca ccc		1043
Leu Ala Lys Glu Thr Phe Gly Ser Leu Glu Glu Thr Ser Pro Pro Pro		
271	276 281 286	
tgc tgg aac tcg gtg acg gac tca ctg ttg ctg gtg cat gag cgc tat		1091
Cys Trp Asn Ser Val Thr Asp Ser Leu Leu Leu Val His Glu Arg Tyr		
287	292 297 302	
gag cag atc tgc gag ttc tac agc cgg gcc aag aag atg aac ctc atc		1139
Glu Gln Ile Cys Glu Phe Tyr Ser Arg Ala Lys Lys Met Asn Leu Ile		
303	308 313 318	
cag agc ctc aac aag cac ctg ctc agc aac ctg gcg gcc atc ctg acg		1187
Gln Ser Leu Asn Lys His Leu Leu Ser Asn Leu Ala Ala Ile Leu Thr		
319	324 329 334	
ccg gtg aag cag gca gtc atc gag ctg agc aac gag agc cag ccc acc		1235
Pro Val Lys Gln Ala Val Ile Glu Leu Ser Asn Glu Ser Gln Pro Thr		
335	340 345 350	
ctg cag ctg gtg ctg ccc acc tac gtc agg ctg gag aag ctg ttc acg		1283
Leu Gln Leu Val Leu Pro Thr Tyr Val Arg Leu Glu Lys Leu Phe Thr		
351	356 361 366	
gcc aag gcc aac gac gca ggc act gtc agc aag ctc tgc cac ctc ttc		1331
Ala Lys Ala Asn Asp Ala Gly Thr Val Ser Lys Leu Cys His Leu Phe		
367	372 377 382	
ctg gag gcg ctc aag gag aac ttc aag gtg cac ccg gcc cac aag gtg		1379
Leu Glu Ala Leu Lys Glu Asn Phe Lys Val His Pro Ala His Lys Val		
383	388 393 398	
gcc atg atc ctg gac ccg cag cag aag ctg cgg cct gtg cca ccc tac		1427
Ala Met Ile Leu Asp Pro Gln Gln Lys Leu Arg Pro Val Pro Pro Tyr		
399	404 409 414	
cag cac gag gag atc atc ggc aag gtc tgt gag ctc atc aac gag gtg		1475
Gln His Glu Glu Ile Ile Gly Lys Val Cys Glu Leu Ile Asn Glu Val		
415	420 425 430	
aag gag tcc tgg gcc gag gag gcc gac ttc gag ccc gct gcc aag aag		1523
Lys Glu Ser Trp Ala Glu Glu Ala Asp Phe Glu Pro Ala Ala Lys Lys		

431	436	441	446	
ccc cgc tct gct gcc gtc gag aac ccc gca gct cag gaa gat gat cgg				1571
Pro Arg Ser Ala Ala Val Glu Asn Pro Ala Ala Gln Glu Asp Asp Arg				
447	452	457	462	
cta ggc aaa aat gaa gtg tac gat tac ctg cag gag ccc ctc ttc cag				1619
Leu Gly Lys Asn Glu Val Tyr Asp Tyr Leu Gln Glu Pro Leu Phe Gln				
463	468	473	478	
gct acc cct gat ctc ttc cag tac tgg tgg tgc gtt acc caa aag cac				1667
Ala Thr Pro Asp Leu Phe Gln Tyr Trp Ser Cys Val Thr Gln Lys His				
479	484	489	494	
aca aaa ctc gcc aag ctc gcc ttc tgg ctc ctg gcg gtt ccg gcc gtg				1715
Thr Lys Leu Ala Lys Leu Ala Phe Trp Leu Leu Ala Val Pro Ala Val				
495	500	505	510	
ggc gcc aga agc ggg tgt gta aat atg tgt gaa caa gcg ctt cta atc				1763
Gly Ala Arg Ser Gly Cys Val Asn Met Cys Glu Gln Ala Leu Leu Ile				
511	516	521	526	
aaa cgg agg cgg ctg ctc agt cca gaa gat atg aat aaa ctc atg ttt				1811
Lys Arg Arg Arg Leu Leu Ser Pro Glu Asp Met Asn Lys Leu Met Phe				
527	532	537	542	
ctg aaa tcc aac atg ctt taa gacttgactt cgggggaaaa aaaaaaaaaa				1861
Leu Lys Ser Asn Met Leu *				
543	548			

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aagggacttt gcatattggt tttgcatctc atttacttct ccattgggtc aggataaaga	180
tggggaatcc cctcctctcc aaacctgccc ccaaaccctt ccttcttgaa ccagaactct	240
cctctccccc gtactccttc ctggaccgcg ctggaagccc tggcggcggc ggccc atg	298
	Met
	1
ggg ccc ttg gcg ctg ccc gcc tgg ctg cag ccc agg tat agg aag aat	346



Gly	Pro	Leu	Ala	Leu	Pro	Ala	Trp	Leu	Gln	Pro	Arg	Tyr	Arg	Lys	Asn	
2					7					12					17	
gcg	tat	ctt	ttc	atc	tat	tac	tta	atc	cag	ttc	tgt	ggc	cac	tct	tgg	394
Ala	Tyr	Leu	Phe	Ile	Tyr	Tyr	Leu	Ile	Gln	Phe	Cys	Gly	His	Ser	Trp	
18					23				28						33	
ata	ttt	aca	aat	atg	aca	gtc	aga	ttc	ttt	tca	ttt	gga	aaa	gat	tca	442
Ile	Phe	Thr	Asn	Met	Thr	Val	Arg	Phe	Phe	Ser	Phe	Gly	Lys	Asp	Ser	
34					39				44						49	
atg	gtt	gac	act	ttt	tat	gct	att	gga	ctt	gtg	atg	cga	ctt	tgc	caa	490
Met	Val	Asp	Thr	Phe	Tyr	Ala	Ile	Gly	Leu	Val	Met	Arg	Leu	Cys	Gln	
50					55				60						65	
tcc	gta	tct	ctc	ctg	gaa	ctg	ctg	cac	ata	tat	gtt	ggc	att	gag	tca	538
Ser	Val	Ser	Leu	Leu	Glu	Leu	Leu	His	Ile	Tyr	Val	Gly	Ile	Glu	Ser	
66					71				76						81	
aac	cat	ctt	ctc	cca	agg	ttt	ttg	cag	ctc	aca	gaa	aga	ata	atc	atc	586
Asn	His	Leu	Leu	Pro	Arg	Phe	Leu	Gln	Leu	Thr	Glu	Arg	Ile	Ile	Ile	
82					87				92						97	
ctt	ttt	gtg	gtg	atc	acc	agt	caa	gag	gaa	gtc	caa	gag	aaa	tat	gtg	634
Leu	Phe	Val	Val	Ile	Thr	Ser	Gln	Glu	Glu	Val	Gln	Glu	Lys	Tyr	Val	
98					103				108						113	
gtg	tgt	gtt	tta	ttc	gtc	ttt	tgg	aat	cta	ttg	gat	atg	gtt	agg	tac	682
Val	Cys	Val	Leu	Phe	Val	Phe	Trp	Asn	Leu	Leu	Asp	Met	Val	Arg	Tyr	
114					119				124						129	
act	tat	agc	atg	tta	tca	gtc	ata	gga	ata	tcc	tat	gct	gtc	ttg	aca	730
Thr	Tyr	Ser	Met	Leu	Ser	Val	Ile	Gly	Ile	Ser	Tyr	Ala	Val	Leu	Thr	
130					135				140						145	
tgg	ctc	agt	caa	aca	cta	tgg	atg	cca	att	tat	cct	ttg	tgt	gtt	ctt	778
Trp	Leu	Ser	Gln	Thr	Leu	Trp	Met	Pro	Ile	Tyr	Pro	Leu	Cys	Val	Leu	
146					151				156						161	
gct	gaa	gca	ttt	gcc	atc	tat	caa	tcg	ctg	cct	tat	ttt	gaa	tca	ttt	826
Ala	Glu	Ala	Phe	Ala	Ile	Tyr	Gln	Ser	Leu	Pro	Tyr	Phe	Glu	Ser	Phe	
162					167				172						177	
ggc	act	tat	tcc	acc	aag	ctg	ccc	ttt	gac	tta	tcc	atc	tat	ttc	cca	874
Gly	Thr	Tyr	Ser	Thr	Lys	Leu	Pro	Phe	Asp	Leu	Ser	Ile	Tyr	Phe	Pro	
178					183				188						193	
tat	gtg	ctg	aaa	ata	tat	ctc	atg	atg	ctc	ttt	ata	ggg	atg	tat	ttt	922
Tyr	Val	Leu	Lys	Ile	Tyr	Leu	Met	Met	Leu	Phe	Ile	Gly	Met	Tyr	Phe	
194					199				204						209	
acc	tac	agt	cat	cta	tac	tca	gaa	aga	aga	gac	atc	ctc	gga	atc	ttt	970
Thr	Tyr	Ser	His	Leu	Tyr	Ser	Glu	Arg	Arg	Asp	Ile	Leu	Gly	Ile	Phe	
210					215				220						225	
ccc	att	aaa	aaa	aag	aag	atg	tga	agtagcat	tccagtgtga	cacgagaaaa						1024
Pro	Ile	Lys	Lys	Lys	Lys	Met	*									

226

231

gagaggctgt ggattcagtg cagtaaataa aacacaggaa gtattctggg ggaaaaatac 1084  
 cttgtatttg ataaaaatcc attacatgaa ataactgcac atacccccaa aactctagac 1144  
 ataacaggct atgtttttca cacattgtat ttttaagaca tatatattct ccataccctg 1204  
 cttcacaaaa attcctgctt catttggtt ttatacaagt tatacttaca ttgtatgaag 1264  
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 aaattaagaa accaaaaaaaa aaaaa 1349

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 gtcctgatat ctcacctggt ctcttattga agac atg gcc gcc gcg tat ttt 172  
 Met Ala Ala Ala Tyr Phe  
 1  
 cca gac tgc ata gtc aga ccc ttt ggc tcc tca gtc aac act ttt ggg 220  
 Pro Asp Cys Ile Val Arg Pro Phe Gly Ser Ser Val Asn Thr Phe Gly  
 7 12 17 22  
 aag tta gga tgt gat ttg gac atg ttt ttg gat cta gat gaa acc aga 268  
 Lys Leu Gly Cys Asp Leu Asp Met Phe Leu Asp Leu Asp Glu Thr Arg  
 23 28 33 38  
 aac ctc agc gct cac aag atc tca gga aat ttt ctg atg gaa ttt caa 316  
 Asn Leu Ser Ala His Lys Ile Ser Gly Asn Phe Leu Met Glu Phe Gln  
 39 44 49 54  
 gtg aaa aat gtt cct tca gaa aga att gca act cag aag atc ctg tct 364  
 Val Lys Asn Val Pro Ser Glu Arg Ile Ala Thr Gln Lys Ile Leu Ser  
 55 60 65 70  
 gtg tta gga gag tgc ctt gac cac ttt ggc cct ggc tgt gtg ggt gtg 412

Val	Leu	Gly	Glu	Cys	Leu	Asp	His	Phe	Gly	Pro	Gly	Cys	Val	Gly	Val		
71					76					81					86		
caa	aaa	ata	tta	aat	gcc	cgg	tgt	ccg	ctc	gtg	agg	ttc	tca	cac	cag	460	
Gln	Lys	Ile	Leu	Asn	Ala	Arg	Cys	Pro	Leu	Val	Arg	Phe	Ser	His	Gln		
87					92					97					102		
gcc	tcc	gga	ttt	cag	tgt	gat	ttg	act	acg	aac	aat	agg	att	gcc	ttg	508	
Ala	Ser	Gly	Phe	Gln	Cys	Asp	Leu	Thr	Thr	Asn	Asn	Arg	Ile	Ala	Leu		
103					108					113					118		
aca	agt	tcc	gaa	ctc	ctt	tat	ata	tat	ggg	gcc	cta	gac	tca	aga	gtg	556	
Thr	Ser	Ser	Glu	Leu	Leu	Tyr	Ile	Tyr	Gly	Ala	Leu	Asp	Ser	Arg	Val		
119					124					129					134		
aga	gcc	ttg	gtg	ttc	agt	gta	cgg	tgc	tgg	gct	cga	gca	cat	tca	cta	604	
Arg	Ala	Leu	Val	Phe	Ser	Val	Arg	Cys	Trp	Ala	Arg	Ala	His	Ser	Leu		
135					140					145					150		
aca	agt	agt	att	cct	ggg	gca	tgg	att	aca	aat	ttc	tcc	ctt	aca	atg	652	
Thr	Ser	Ser	Ile	Pro	Gly	Ala	Trp	Ile	Thr	Asn	Phe	Ser	Leu	Thr	Met		
151					156					161					166		
atg	gtc	atc	ttt	ttt	ctc	cag	aga	aga	tca	ccc	cct	att	ctt	cca	aca	700	
Met	Val	Ile	Phe	Phe	Leu	Gln	Arg	Arg	Ser	Pro	Pro	Ile	Leu	Pro	Thr		
167					172					177					182		
cta	gat	tcc	tta	aaa	acc	cta	gca	gat	gca	gaa	gat	aaa	tgt	gta	ata	748	
Leu	Asp	Ser	Leu	Lys	Thr	Leu	Ala	Asp	Ala	Glu	Asp	Lys	Cys	Val	Ile		
183					188					193					198		
gaa	ggc	aac	aac	tgc	aca	ttt	gtt	cgt	gac	ttg	agt	aga	att	aaa	cct	796	
Glu	Gly	Asn	Asn	Cys	Thr	Phe	Val	Arg	Asp	Leu	Ser	Arg	Ile	Lys	Pro		
199					204					209					214		
tca	cag	aac	aca	gaa	aca	tta	gaa	tta	cta	ctg	aag	gaa	ttt	ttt	gag	844	
Ser	Gln	Asn	Thr	Glu	Thr	Leu	Glu	Leu	Leu	Leu	Lys	Glu	Phe	Phe	Glu		
215					220					225					230		
tat	ttt	ggc	aat	ttt	gct	ttc	gat	aaa	aat	tcc	ata	aat	att	cga	cag	892	
Tyr	Phe	Gly	Asn	Phe	Ala	Phe	Asp	Lys	Asn	Ser	Ile	Asn	Ile	Arg	Gln		
231					236					241					246		
gga	agg	gag	caa	aac	aaa	cct	gat	tct	tct	cct	ctg	tac	att	cag	aat	940	
Gly	Arg	Glu	Gln	Asn	Lys	Pro	Asp	Ser	Ser	Pro	Leu	Tyr	Ile	Gln	Asn		
247					252					257					262		
cca	ttt	gaa	act	tct	ctc	aac	ata	agc	aaa	aat	gta	agt	caa	agc	cag	988	
Pro	Phe	Glu	Thr	Ser	Leu	Asn	Ile	Ser	Lys	Asn	Val	Ser	Gln	Ser	Gln		
263					268					273					278		
ctg	caa	aaa	ttt	gta	gat	ttg	gcc	cga	gaa	agt	gcc	tgg	att	tta	caa	1036	
Leu	Gln	Lys	Phe	Val	Asp	Leu	Ala	Arg	Glu	Ser	Ala	Trp	Ile	Leu	Gln		
279					284					289					294		
cag	gaa	gat	aca	gat	cga	cct	tcc	ata	tca	agt	aat	cgg	ccc	tgg	ggg	1084	
Gln	Glu	Asp	Thr	Asp	Arg	Pro	Ser	Ile	Ser	Ser	Asn	Arg	Pro	Trp	Gly		

295	300	305	310	
ctg gta tcc cta ttg cta cca tct gct cca aac aga aag tcc ttt acc				1132
Leu Val Ser Leu Leu Leu Pro Ser Ala Pro Asn Arg Lys Ser Phe Thr				
311	316	321	326	
aag aag aaa agc aat aag ttt gca att gaa aca gtc aaa aac ttg cta				1180
Lys Lys Lys Ser Asn Lys Phe Ala Ile Glu Thr Val Lys Asn Leu Leu				
327	332	337	342	
gaa tct tta aaa ggt aac aga aca gaa aat ttc aca aaa acc agt ggg				1228
Glu Ser Leu Lys Gly Asn Arg Thr Glu Asn Phe Thr Lys Thr Ser Gly				
343	348	353	358	
gaa gag gaa caa tta gta ctc agg aca tga t gggcttgcta cattgtgtta				1279
Glu Glu Glu Gln Leu Val Leu Arg Thr *				
359	364			
aaggaactgg ggctttngcc tattccaaat gggctctgtgg gantttactt nggggaaaaa				1339
ctgggttttgg aaacttttcc acagggttctt caggcttttt cctcttggg ttgttttt				1397

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 <212> DNA  
 <213> Homo sapiens

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 <222> (521) .. (1024)

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gggagtcaac acaggaaaga ttagagcacg tgggcagagg ctgttgccca ttggtcacat	180
gtggtcagca gagagcagg gaccagcacc ctggagcttt gcaggaagaa ccagacagcc	240
tggagctgag gttttaattg taggggccaa acaaatggg gaaaaagaca aatttagaaa	300
acaaagaaag tagatgctca actgagccag aaggaagtca ctagcaaaga ggaaaaaat	360
agagctctgg aaaaatagtg taaacagtca caagaaagg accctgtgtc atgcctgaca	420
tctggacagg tatataaaga gccaggtc aggagctcc acacctgcac ctccctctca	480
cctgctcctc tacctgatcc accctcaatc caccagaacc atg ggc tgc tgt ggc	535
Met Gly Cys Cys Gly	
1	
tgc tcc gga ggc tgt ggc tcc ggc tgt ggc ggc tgc agc tgt	583
Cys Ser Gly Gly Cys Gly Ser Gly Cys Gly Cys Gly Ser Ser Cys	

6	11	16	21	
ggg ggt tgt ggc tct ggc tgt ggg ggc tgt ggc tcc ggc cgt ggg ggc				631
Gly Gly Cys Gly Ser Gly Cys Gly Gly Cys Gly Ser Gly Arg Gly Gly				
22	27	32	37	
tgt ggc tct ggc tgt ggg ggc tgc agc tcc agc tgt ggg gga tgt ggc				679
Cys Gly Ser Gly Cys Gly Gly Cys Ser Ser Ser Cys Gly Gly Cys Gly				
38	43	48	53	
tcc aga tgt tat gtg cct gtc tgc tgc tgc aag ccc gtg tgc tcc tgg				727
Ser Arg Cys Tyr Val Pro Val Cys Cys Cys Lys Pro Val Cys Ser Trp				
54	59	64	69	
gtg cca gcc tgt tcc tgc acc agc tgt ggc tcc tgt ggg ggc tcc aag				775
Val Pro Ala Cys Ser Cys Thr Ser Cys Gly Ser Cys Gly Gly Ser Lys				
70	75	80	85	
ggg ggc tgt ggc tcc tgt ggg ggt tcc aag ggg ggc tgt ggt tct tgt				823
Gly Gly Cys Gly Ser Cys Gly Gly Ser Lys Gly Gly Cys Gly Ser Cys				
86	91	96	101	
ggc tgc tcc cag tcc agc tgt tgt aag ccc tgt tgc tgc tcc tca ggc				871
Gly Cys Ser Gln Ser Ser Cys Cys Lys Pro Cys Cys Cys Ser Ser Gly				
102	107	112	117	
tgt gga tca tcc tgc tgc cag tcc agc tgc tgc aag ccc tgc tgc tgc				919
Cys Gly Ser Ser Cys Cys Gln Ser Ser Cys Cys Lys Pro Cys Cys Cys				
118	123	128	133	
cag tcc agc tgc tgt gtc ccc gtg tgc tgc cag tcc agc tgc tgc aag				967
Gln Ser Ser Cys Cys Val Pro Val Cys Cys Gln Ser Ser Cys Cys Lys				
134	139	144	149	
ccc tgt tgc tgc cag tcc aac tgt tgt gtc cct gtg tgc tgc cag tgt				1015
Pro Cys Cys Cys Gln Ser Asn Cys Cys Val Pro Val Cys Cys Gln Cys				
150	155	160	165	
aag atc tga ggctctg gaccagacc ttcaggttc tctgttttg tgaaagcatt				1071
Lys Ile *				
166				
tcttatgggt cctgagtc gttcgtccca cacatcctcc ctgaggcacc tgcacctgct				1131
ctagctcacc atccatgcac acacctcctt ccatgggtca gctctcctct gggccctgcc				1191
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cgcaggcacc cagcogactg ccacgatgtt ccctgcactt ggggtgtggac catcttcttc				1311
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agtgatcact aagaaccagc ttotcaacca ccatcaggac cctggatcct cctgggcccgc				1431
tgccgtttct cctgtggccc aagtgtgacc aggaaggtct ctttccttcc tgttgtctcc				1491
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 <212> DNA  
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 <222> (359) .. (2530)

<220>  
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 <222> (1) ... (2907)  
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 ctgaaagcgg caagtagcgc accatattat gtagttagtc atcataaggc accaggnctt 180  
 acactatggc tcnnggctcgt atgtgtgtgg aatgtgagcg gatacanttc acacagnaan 240  
 cagtaatgac atgattacga ttttatacac tcactatagg ggaatntggc cctcgaggcc 300  
 aagaattcng gcacgagggg cagcttcctt gcggaagtgg tgaccgtgag agaagaag 358  
 atg gcg gcc cct gta gtg gcg ccg cct ggt gtg gtg gtt agt cgg gct 406  
 Met Ala Ala Pro Val Val Ala Pro Pro Gly Val Val Val Ser Arg Ala  
 1 5 10 15  
 aac aag cgc agc ggc gcg ggg ccg gga ggc agc ggt ggc ggg gga gcc 454  
 Asn Lys Arg Ser Gly Ala Gly Pro Gly Gly Ser Gly Gly Gly Gly Ala  
 17 22 27 32  
 aga ggg gcg gag gag gaa ccg ccg ccg ccc cta caa gca gtt ctg gtg 502  
 Arg Gly Ala Glu Glu Glu Pro Pro Pro Pro Leu Gln Ala Val Leu Val  
 33 38 43 48  
 gcc gat agc ttc gat cgc cgc ttc ttc ccc atc tcc aag gac cag cct 550  
 Ala Asp Ser Phe Asp Arg Arg Phe Phe Pro Ile Ser Lys Asp Gln Pro  
 49 54 59 64  
 cgg gtc ctc ttg ccc ctg gcc aat gtg gca tta att gac tac act ctg 598  
 Arg Val Leu Leu Pro Leu Ala Asn Val Ala Leu Ile Asp Tyr Thr Leu  
 65 70 75 80  
 gaa ttc ctg act gcc aca ggt gta cag gaa aca ttt gtc ttt tgt tgc 646  
 Glu Phe Leu Thr Ala Thr Gly Val Gln Glu Thr Phe Val Phe Cys Cys  
 81 86 91 96  
 tgg aaa gct gct caa atc aaa gaa cat tta ctg aag tca aag tgg tgc 694

Trp	Lys	Ala	Ala	Gln	Ile	Lys	Glu	His	Leu	Leu	Lys	Ser	Lys	Trp	Cys	
97					102					107					112	
cgc	cct	aca	tct	ctc	aat	gtg	gtt	cga	ata	att	aca	tca	gag	ctc	tat	742
Arg	Pro	Thr	Ser	Leu	Asn	Val	Val	Arg	Ile	Ile	Thr	Ser	Glu	Leu	Tyr	
113					118					123					128	
cga	tca	ctg	gga	gat	gtc	ctc	cgt	gat	gtt	gat	gcc	aag	gct	ttg	gtg	790
Arg	Ser	Leu	Gly	Asp	Val	Leu	Arg	Asp	Val	Asp	Ala	Lys	Ala	Leu	Val	
129					134					139					144	
cgc	tct	gac	ttt	ctt	ctg	gtg	tat	ggg	gat	gtc	atc	tca	aac	atc	aat	838
Arg	Ser	Asp	Phe	Leu	Leu	Val	Tyr	Gly	Asp	Val	Ile	Ser	Asn	Ile	Asn	
145					150					155					160	
atc	acc	aga	gcc	ctt	gag	gaa	cac	agg	ttg	aga	cgg	aag	cta	gaa	aaa	886
Ile	Thr	Arg	Ala	Leu	Glu	Glu	His	Arg	Leu	Arg	Arg	Lys	Leu	Glu	Lys	
161					166					171					176	
aat	gtt	tct	gtg	atg	acg	atg	atc	ttc	aag	gag	tca	tcc	ccc	agc	cac	934
Asn	Val	Ser	Val	Met	Thr	Met	Ile	Phe	Lys	Glu	Ser	Ser	Pro	Ser	His	
177					182					187					192	
cca	act	cgt	tgc	cac	gaa	gac	aat	gtg	gta	gtg	gct	gtg	gat	agt	acc	982
Pro	Thr	Arg	Cys	His	Glu	Asp	Asn	Val	Val	Val	Ala	Val	Asp	Ser	Thr	
193					198					203					208	
aca	aac	agg	gtt	ctc	cat	ttt	cag	aag	acc	cag	ggt	ctc	cgg	cgt	ttt	1030
Thr	Asn	Arg	Val	Leu	His	Phe	Gln	Lys	Thr	Gln	Gly	Leu	Arg	Arg	Phe	
209					214					219					224	
gca	ttt	cct	ctg	agc	ctg	ttt	cag	ggc	agt	agt	gat	gga	gtg	gag	gtt	1078
Ala	Phe	Pro	Leu	Ser	Leu	Phe	Gln	Gly	Ser	Ser	Asp	Gly	Val	Glu	Val	
225					230					235					240	
cga	tat	gat	tta	ctg	gat	tgt	cat	atc	agc	atc	tgt	tct	cct	cag	gtg	1126
Arg	Tyr	Asp	Leu	Leu	Asp	Cys	His	Ile	Ser	Ile	Cys	Ser	Pro	Gln	Val	
241					246					251					256	
gca	caa	ctc	ttt	aca	gac	aac	ttt	gac	tac	caa	act	cga	gat	gac	ttt	1174
Ala	Gln	Leu	Phe	Thr	Asp	Asn	Phe	Asp	Tyr	Gln	Thr	Arg	Asp	Asp	Phe	
257					262					267					272	
gtg	cga	ggt	ctc	tta	gtg	aat	gag	gag	atc	cta	ggg	aac	cag	atc	cac	1222
Val	Arg	Gly	Leu	Leu	Val	Asn	Glu	Glu	Ile	Leu	Gly	Asn	Gln	Ile	His	
273					278					283					288	
atg	cac	gta	aca	gct	aag	gaa	tat	ggt	gcc	cgt	gtc	tcc	aac	cta	cac	1270
Met	His	Val	Thr	Ala	Lys	Glu	Tyr	Gly	Ala	Arg	Val	Ser	Asn	Leu	His	
289					294					299					304	
atg	tac	tca	gct	gtc	tgt	gct	gac	gtc	atc	cgc	cga	tgg	gtc	tac	cct	1318
Met	Tyr	Ser	Ala	Val	Cys	Ala	Asp	Val	Ile	Arg	Arg	Trp	Val	Tyr	Pro	
305					310					315					320	
ctc	acc	cca	gag	gcg	aac	ttc	act	gac	agc	acc	acc	cag	agc	tgc	act	1366
Leu	Thr	Pro	Glu	Ala	Asn	Phe	Thr	Asp	Ser	Thr	Thr	Gln	Ser	Cys	Thr	

321	326	331	336	
cat tcc cgg cac aac atc tac cga ggg cct gag gtc agc ctg ggc cat				1414
His Ser Arg His Asn Ile Tyr Arg Gly Pro Glu Val Ser Leu Gly His				
337	342	347	352	
ggc agc atc cta gag gaa aat gtg ctc ctg ggc tct ggc act gtc att				1462
Gly Ser Ile Leu Glu Glu Asn Val Leu Leu Gly Ser Gly Thr Val Ile				
353	358	363	368	
ggc agc aat tgc ttt atc acc aac agt gtc att ggc ccc ggc tgc cac				1510
Gly Ser Asn Cys Phe Ile Thr Asn Ser Val Ile Gly Pro Gly Cys His				
369	374	379	384	
att gag cca ggt gat aac gtg gtg ctg gac cag acc tac ctg tgg cag				1558
Ile Glu Pro Gly Asp Asn Val Val Leu Asp Gln Thr Tyr Leu Trp Gln				
385	390	395	400	
ggt gtt cga gtg gcg gct gga gca cag atc cat cag tct ctg ctt tgt				1606
Gly Val Arg Val Ala Ala Gly Ala Gln Ile His Gln Ser Leu Leu Cys				
401	406	411	416	
gac aat gct gag gtc aag gaa cga gtg aca ctg aaa cca cgc tct gtc				1654
Asp Asn Ala Glu Val Lys Glu Arg Val Thr Leu Lys Pro Arg Ser Val				
417	422	427	432	
ctc act tcc cag gtg gtc gtg ggc cca aat atc acg ctg cct gag ggc				1702
Leu Thr Ser Gln Val Val Val Gly Pro Asn Ile Thr Leu Pro Glu Gly				
433	438	443	448	
tcg gtg atc tct ttg cac cct cca gat gca gag gaa gat gaa gat gat				1750
Ser Val Ile Ser Leu His Pro Pro Asp Ala Glu Glu Asp Glu Asp Asp				
449	454	459	464	
ggc gag ttc agt gat gat tct ggg gct gac caa gaa aag gac aaa gtg				1798
Gly Glu Phe Ser Asp Asp Ser Gly Ala Asp Gln Glu Lys Asp Lys Val				
465	470	475	480	
aag atg aaa ggt tac aat cca gca gaa gta gga gct gct ggc aag ggc				1846
Lys Met Lys Gly Tyr Asn Pro Ala Glu Val Gly Ala Ala Gly Lys Gly				
481	486	491	496	
tac ctc tgg aaa gct gca ggc atg aac atg gag gaa gag gag gaa ctg				1894
Tyr Leu Trp Lys Ala Ala Gly Met Asn Met Glu Glu Glu Glu Glu Leu				
497	502	507	512	
cag cag aat ctg tgg gga ctc aag atc aac atg gaa gaa gag agt gaa				1942
Gln Gln Asn Leu Trp Gly Leu Lys Ile Asn Met Glu Glu Glu Ser Glu				
513	518	523	528	
agt gaa agt gag caa agt atg gat tct gag gag ccg gac agc cgg gga				1990
Ser Glu Ser Glu Gln Ser Met Asp Ser Glu Glu Pro Asp Ser Arg Gly				
529	534	539	544	
ggc tcc cct cag atg gat gac atc aaa gtg ttc cag aat gaa gtt tta				2038
Gly Ser Pro Gln Met Asp Asp Ile Lys Val Phe Gln Asn Glu Val Leu				
545	550	555	560	



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Gly Thr Leu Gln Arg Gly Lys Glu Glu Asn Ile Ser Cys Asp Asn Leu	
561 566 571 576	
gtc ctg gaa atc aac tct ctc aag tat gcc tat aac ata agt cta aag	2134
Val Leu Glu Ile Asn Ser Leu Lys Tyr Ala Tyr Asn Ile Ser Leu Lys	
577 582 587 592	
gag gtg atg cag gta ctg agc cac gtg gtc ctg gag ttc ccc ctg caa	2182
Glu Val Met Gln Val Leu Ser His Val Val Leu Glu Phe Pro Leu Gln	
593 598 603 608	
cag atg gat tcc ccg ctt gac tca agc cgc tac tgt gcc ctg ctg ctt	2230
Gln Met Asp Ser Pro Leu Asp Ser Ser Arg Tyr Cys Ala Leu Leu Leu	
609 614 619 624	
cct ctg cta aag gcc tgg agc cct gtt ttt agg aac tac ata aag cgc	2278
Pro Leu Leu Lys Ala Trp Ser Pro Val Phe Arg Asn Tyr Ile Lys Arg	
625 630 635 640	
gca gcc gac cat ttg gaa gcg tta gca gcc att gag gac ttc ttc cta	2326
Ala Ala Asp His Leu Glu Ala Leu Ala Ala Ile Glu Asp Phe Phe Leu	
641 646 651 656	
gag cat gaa gct ctt ggt att tcc atg gcc aag gta ctg atg gct ttc	2374
Glu His Glu Ala Leu Gly Ile Ser Met Ala Lys Val Leu Met Ala Phe	
657 662 667 672	
tac cag ctg gag atc ctg gct gag gaa aca att ctg agc tgg ttc agc	2422
Tyr Gln Leu Glu Ile Leu Ala Glu Glu Thr Ile Leu Ser Trp Phe Ser	
673 678 683 688	
caa aga gat aca act gac aag ggc cag cag ttg cgc aag aat caa cag	2470
Gln Arg Asp Thr Thr Asp Lys Gly Gln Gln Leu Arg Lys Asn Gln Gln	
689 694 699 704	
ctg cag agg ttc atc cag tgg cta aaa gag gca gaa gag gag tca tct	2518
Leu Gln Arg Phe Ile Gln Trp Leu Lys Glu Ala Glu Glu Glu Ser Ser	
705 710 715 720	
gaa gat gac tga agt cacactgcct gctcctttgg gtgtgattga gtgccctcct	2573
Glu Asp Asp *	
721	
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gctgagactg aaaggagcag aggctggaac tacagtattc tttccctgc tagcaaccat	2693
gtgcctccca tctgactgt ggagttggga tgtggaagtg gggctggaac aaagcttctg	2753
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 Met Ile Ser Ile Thr Glu Trp Gln  
 1 5  
 aag att ggt gtg ggg atc acc ggt ttc ggc atc ttc ttc atc ctc ttt 159  
 Lys Ile Gly Val Gly Ile Thr Gly Phe Gly Ile Phe Phe Ile Leu Phe  
 9 14 19 24  
 gga aca ctc ctg tac ttt gat tcc gtg ctc ctg gcc ttt gga aac ctg 207  
 Gly Thr Leu Leu Tyr Phe Asp Ser Val Leu Leu Ala Phe Gly Asn Leu  
 25 30 35 40  
 ctg ttc ctg acg ggc ctg tcc ctc atc att ggc ctg agg aag acc ttt 255  
 Leu Phe Leu Thr Gly Leu Ser Leu Ile Ile Gly Leu Arg Lys Thr Phe  
 41 46 51 56  
 tgg ttc ttc ttc caa cgg cac aaa ctc aag gga acc agc ttc ctc ctg 303  
 Trp Phe Phe Phe Gln Arg His Lys Leu Lys Gly Thr Ser Phe Leu Leu  
 57 62 67 72  
 ggg ggt gtg gtt atc gtg ctc cta cgc tgg ccc ctc ctc ggc atg ttc 351  
 Gly Gly Val Val Ile Val Leu Leu Arg Trp Pro Leu Leu Gly Met Phe  
 73 78 83 88  
 ctg gaa acc tac gga ttc ttc agc ctc ttt aag ggc ttt ttc cct gtc 399  
 Leu Glu Thr Tyr Gly Phe Phe Ser Leu Phe Lys Gly Phe Phe Pro Val  
 89 94 99 104  
 gcc ttc ggc ttc ctg ggc aat gtc tgc aac atc ccc ttc ctg ggt gcg 447  
 Ala Phe Gly Phe Leu Gly Asn Val Cys Asn Ile Pro Phe Leu Gly Ala  
 105 110 115 120  
 ctg ttc cgg aga ctt caa ggc act agc tgc atg gtc tga aaaacagaga 496  
 Leu Phe Arg Arg Leu Gln Gly Thr Ser Ser Met Val \*  
 121 126 131  
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 ctcagtcccc tgcactgact cactccccga catatccgga cctcccccaag tccagaagga 616  
 aggaatggag ctgagcaact gacgtcaaact cccaagtcg actcaagagg ctgccaggaa 676



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gaatcaaata tatattcacc tttaacctct tttatcactg ctgattcaga actccatgac	1112
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ccaaatactt tgccaatatt tacctccaac tctgaaatca agggagtgtg cagtgtgggt	1232
tggtgctacc acctcttctc tgaagaattt gaaaaccagc ataaagaacg tactcaggaa	1292
aagtggggat ttccaatgtg ccactattta aaggaagaga gatgggtgctg tggctgtaat	1352
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gttgactggt ctccctgtat agagactttg attcttctgg atcgactttg ttacctgaaa	1712
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ggcaggctcc cagaacttga agccaccaga cccac atg gaa cca aag gcc tcc	174
Met Glu Pro Lys Ala Ser	
1	
tgt cca gct gct gca ccc ttg atg gag aga aaa ttc cat gtt ctt gtg	222
Cys Pro Ala Ala Ala Pro Leu Met Glu Arg Lys Phe His Val Leu Val	
7 12 17 22	
ggt gtc acg ggg agt gtc gca gcc ctg aag ttg cct ctt ctg gtg tca	270
Gly Val Thr Gly Ser Val Ala Ala Leu Lys Leu Pro Leu Leu Val Ser	
23 28 33 38	
aag ctt ttg gac att cct ggg ctg gaa gta gca gtg gtc aca act gag	318
Lys Leu Leu Asp Ile Pro Gly Leu Glu Val Ala Val Val Thr Thr Glu	
39 44 49 54	
aga gcc aaa cat ttc tac agc ccc cag gac att cct gtc acc ctc tac	366
Arg Ala Lys His Phe Tyr Ser Pro Gln Asp Ile Pro Val Thr Leu Tyr	
55 60 65 70	
agc gac gct gat gaa tgg gag atg tgg aag agc cgc tct gac cca gtt	414
Ser Asp Ala Asp Glu Trp Glu Met Trp Lys Ser Arg Ser Asp Pro Val	
71 76 81 86	
ctg cac att gac ctg cgg agg tgg gca gac ctc ctg ctg gtg gct cct	462
Leu His Ile Asp Leu Arg Arg Trp Ala Asp Leu Leu Leu Val Ala Pro	
87 92 97 102	
ctt gat gcc aac act ctg ggg aag gtg gcc agt ggc atc tgt gac aac	510
Leu Asp Ala Asn Thr Leu Gly Lys Val Ala Ser Gly Ile Cys Asp Asn	
103 108 113 118	
ttg ctt acc tgc gtc atg cgg gcc tgg gac cgc agc aag ccc ctg ctc	558
Leu Leu Thr Cys Val Met Arg Ala Trp Asp Arg Ser Lys Pro Leu Leu	
119 124 129 134	
ttc tgc ccg gcc atg aac acc gcc atg tgg gag cac ccg atc aca gcg	606
Phe Cys Pro Ala Met Asn Thr Ala Met Trp Glu His Pro Ile Thr Ala	
135 140 145 150	
cag cag gta gac cag ctc aag gcc ttt ggc tat gtc gag atc ccc tgt	654
Gln Gln Val Asp Gln Leu Lys Ala Phe Gly Tyr Val Glu Ile Pro Cys	
151 156 161 166	
gtg gcc aag aag ctg gtg tgc gga gat gaa ggt ctc ggg gcc atg gct	702
Val Ala Lys Lys Leu Val Cys Gly Asp Glu Gly Leu Gly Ala Met Ala	
167 172 177 182	
gaa gtg ggg acc atc gtg gac aaa gtg aaa gaa gtc ctc ttc cag cac	750
Glu Val Gly Thr Ile Val Asp Lys Val Lys Glu Val Leu Phe Gln His	
183 188 193 198	

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 Ser Gly Phe Gln Gln Ser \*  
 199 204

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 Lys Ser Val Lys Asp Val Asp Arg Tyr Gln Ala Val Leu Ala Asn Leu  
 4 9 14 19

ctg ctg gag gag gat aac aag ttt tgt gca gat tgc cag tct aaa ggg	151
Leu Leu Glu Glu Asp Asn Lys Phe Cys Ala Asp Cys Gln Ser Lys Gly	
20 25 30 35	
ccg cga tgg gcc tct tgg aac att ggt gtg ttc atc tgc att cga tgt	199
Pro Arg Trp Ala Ser Trp Asn Ile Gly Val Phe Ile Cys Ile Arg Cys	
36 41 46 51	
gct gga atc cac agg aat ctg ggg gtg cac ata tcc agg gta aag tca	247
Ala Gly Ile His Arg Asn Leu Gly Val His Ile Ser Arg Val Lys Ser	
52 57 62 67	
gtt aac ctc gac cag tgg act caa gaa cag att cag tgc atg caa gag	295
Val Asn Leu Asp Gln Trp Thr Gln Glu Gln Ile Gln Cys Met Gln Glu	
68 73 78 83	
atg gga aat gga aag gca aac cga ctt tat gaa gcc tat ctt cct gag	343
Met Gly Asn Gly Lys Ala Asn Arg Leu Tyr Glu Ala Tyr Leu Pro Glu	
84 89 94 99	
acc ttt cgg cga cct cag ata gac cca gct gtt gaa gga ttt att cga	391
Thr Phe Arg Arg Pro Gln Ile Asp Pro Ala Val Glu Gly Phe Ile Arg	
100 105 110 115	
gac aaa tat gag aag aag aaa tac atg gac cga agt ctg gac atc aat	439
Asp Lys Tyr Glu Lys Lys Lys Tyr Met Asp Arg Ser Leu Asp Ile Asn	
116 121 126 131	
gcc ttt agg aaa gaa aaa gat gac aag tgg aaa aga ggg agc gaa cca	487
Ala Phe Arg Lys Glu Lys Asp Asp Lys Trp Lys Arg Gly Ser Glu Pro	
132 137 142 147	
gtt cca gaa aaa aaa ttg gaa cct gtt gtt ttt gag aag gtg aaa atg	535
Val Pro Glu Lys Lys Leu Glu Pro Val Val Phe Glu Lys Val Lys Met	
148 153 158 163	
cca cag aaa aaa gaa gac cca cag cta cct cgg aaa agc tcc ccg aaa	583
Pro Gln Lys Lys Glu Asp Pro Gln Leu Pro Arg Lys Ser Ser Pro Lys	
164 169 174 179	
tcc aca gcg cct gtc atg gat ttg ttg ggc ctt gat gct cct gtg gcc	631
Ser Thr Ala Pro Val Met Asp Leu Leu Gly Leu Asp Ala Pro Val Ala	
180 185 190 195	
tgc tcc att gca aat agt aag acc agc aat acc cta gag aag gat tta	679
Cys Ser Ile Ala Asn Ser Lys Thr Ser Asn Thr Leu Glu Lys Asp Leu	
196 201 206 211	
gat ctg ttg gcc tct gtt cca tcc cct tct tct tcc ggt tcc aga aag	727
Asp Leu Leu Ala Ser Val Pro Ser Pro Ser Ser Ser Gly Ser Arg Lys	
212 217 222 227	
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Val Val Gly Ser Met Pro Thr Ala Gly Ser Ala Gly Ser Val Pro Glu	
228 233 238 243	

aat ctg aac ctg ttt ccg gag cca ggg agc aaa tca gaa gaa ata ggc	823
Asn Leu Asn Leu Phe Pro Glu Pro Gly Ser Lys Ser Glu Glu Ile Gly	
244 249 254 259	
aag aaa cag ctc tct aaa gac tcc att ctt tca ctg tat gga tcc cag	871
Lys Lys Gln Leu Ser Lys Asp Ser Ile Leu Ser Leu Tyr Gly Ser Gln	
260 265 270 275	
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Thr Pro Gln Met Pro Thr Gln Ala Met Phe Met Ala Pro Ala Gln Met	
276 281 286 291	
gca tat ccc aca gcc tac ccc agc ttc ccc ggg gtt aca cct cct aac	967
Ala Tyr Pro Thr Ala Tyr Pro Ser Phe Pro Gly Val Thr Pro Pro Asn	
292 297 302 307	
agc ata atg ggg agc atg atg cct cca cca gta ggc atg gtt gct cag	1015
Ser Ile Met Gly Ser Met Met Pro Pro Pro Val Gly Met Val Ala Gln	
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cca gga gct tct ggg atg gtt gcc ccc atg gcc atg cct gca ggc tat	1063
Pro Gly Ala Ser Gly Met Val Ala Pro Met Ala Met Pro Ala Gly Tyr	
324 329 334 339	
atg ggt ggc atg cag gca tca atg atg ggt gtg ccg aat gga atg atg	1111
Met Gly Gly Met Gln Ala Ser Met Met Gly Val Pro Asn Gly Met Met	
340 345 350 355	
acc acc cag cag gct ggc tac atg gca ggc atg gca gct atg ccc cag	1159
Thr Thr Gln Gln Ala Gly Tyr Met Ala Gly Met Ala Ala Met Pro Gln	
356 361 366 371	
act gtg tat ggg gtc cag cca gct cag cag ctg caa tgg aac ctt act	1207
Thr Val Tyr Gly Val Gln Pro Ala Gln Gln Leu Gln Trp Asn Leu Thr	
372 377 382 387	
cag atg acc cag cag atg gct ggg atg aac ttc tat gga gcc aat ggc	1255
Gln Met Thr Gln Gln Met Ala Gly Met Asn Phe Tyr Gly Ala Asn Gly	
388 393 398 403	
atg atg aac tat gga cag tca atg agt ggc gga aat gga cag gca gca	1303
Met Met Asn Tyr Gly Gln Ser Met Ser Gly Gly Asn Gly Gln Ala Ala	
404 409 414 419	
aat cag act ctc agt cct cag atg tgg aaa taa aaacaaaa cacctgtatg	1354
Asn Gln Thr Leu Ser Pro Gln Met Trp Lys *	
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Pro Ser Asn Arg Cys His Tyr Leu Leu Asn Gln Gly Trp Val Ala Asn  
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Ser Gly Lys Gly Gly Arg Thr Asn Ile Pro Asp Lys Glu Leu Lys Ser  
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Gly Asp Asp Pro Glu Asn Val His Ile Thr Ser Phe Gln Tyr Leu Ala  
49 54 59 64

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Thr Glu Pro Pro His Pro Ser Val Gly Ser Cys Ala Ala Arg Ala Ser  
81 86 91 96

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97 102 107 112

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113 118 123 128

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Tyr Thr Ser Gly Leu Cys Gln Pro Cys Asp Cys Ser Pro His Gly Ala	
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Ser Lys Asn Gly Cys Leu Pro Cys Gln Cys Asn Asn Arg Ser Ala Ser	
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 Pro Ser Met Ile Asp Trp Ile Lys Lys Ile Trp Tyr Ile Tyr Thr Met  
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 Glu Tyr Tyr Ala Thr Ile Lys Arg Asn Glu Ile Met Phe Phe Ala Gly



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Tyr Met Phe Ser Leu Ile Ser Gly Ser *				
63	68			
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Asp Gly Glu Ala Gly Ile Glu Ala Val Gly Ser Ala Ala Glu Glu Lys	
23 28 33 38	

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Gly Gly Leu Val Ser Asp Ala Tyr Gly Glu Asp Asp Phe Ser Arg Leu	
39 44 49 54	

ggg ggt gat gaa gat ggt tat gaa gaa gaa gaa gat gag aac agt aga	246
Gly Gly Asp Glu Asp Gly Tyr Glu Glu Glu Glu Asp Glu Asn Ser Arg	
55 60 65 70	

cag tcg gaa gat gac gat tca gag act gaa aaa cct gag gct gat gac	294
Gln Ser Glu Asp Asp Asp Ser Glu Thr Glu Lys Pro Glu Ala Asp Asp	

71	76	81	86	
cca aag gat aat aca gaa gca gaa aag cga gac ccc cag gaa ctc gtg				342
Pro Lys Asp Asn Thr Glu Ala Glu Lys Arg Asp Pro Gln Glu Leu Val				
87	92	97	102	
gcc tcc ttt tct gaa aga gtt cgg aac atg tgc cct gat gaa atc aag				390
Ala Ser Phe Ser Glu Arg Val Arg Asn Met Ser Pro Asp Glu Ile Lys				
103	108	113	118	
atc ccg cca gaa ccc cct ggc aga tgt tca aat cac ttg caa gac aag				438
Ile Pro Pro Glu Pro Pro Gly Arg Cys Ser Asn His Leu Gln Asp Lys				
119	124	129	134	
atc cag aag ctt tat gaa cga aag ata aag gag gga atg gat atg aac				486
Ile Gln Lys Leu Tyr Glu Arg Lys Ile Lys Glu Gly Met Asp Met Asn				
135	140	145	150	
tac att atc caa agg aag aaa gaa ttt cgg aac cct agc atc tac gag				534
Tyr Ile Ile Gln Arg Lys Lys Glu Phe Arg Asn Pro Ser Ile Tyr Glu				
151	156	161	166	
aag ctg atc cag ttc tgt gcc att gac gag ctt ggc acc aac tac cca				582
Lys Leu Ile Gln Phe Cys Ala Ile Asp Glu Leu Gly Thr Asn Tyr Pro				
167	172	177	182	
aag gat atg ttt gat ccc cat ggc tgg tct gag gac tcc tac tat gag				630
Lys Asp Met Phe Asp Pro His Gly Trp Ser Glu Asp Ser Tyr Tyr Glu				
183	188	193	198	
gca tta gcc aag gcc cag aaa att gag atg gac aaa ttg gaa aag gcc				678
Ala Leu Ala Lys Ala Gln Lys Ile Glu Met Asp Lys Leu Glu Lys Ala				
199	204	209	214	
aaa aag gag cga aca aaa att gag ttt gtg acg ggc acc aaa aaa ggc				726
Lys Lys Glu Arg Thr Lys Ile Glu Phe Val Thr Gly Thr Lys Lys Gly				
215	220	225	230	
acc acg acc aac gcc acg tcc acc acc act acc act gcc agc aca gct				774
Thr Thr Thr Asn Ala Thr Ser Thr Thr Thr Thr Thr Ala Ser Thr Ala				
231	236	241	246	
gtt gca gat gct cag aag aga aag agc aag tgg gat tgc gct atc cca				822
Val Ala Asp Ala Gln Lys Arg Lys Ser Lys Trp Asp Ser Ala Ile Pro				
247	252	257	262	
gtg aca acg ata gcc cag ccc acc atc ctc acc acc aca gcc acc ctg				870
Val Thr Thr Ile Ala Gln Pro Thr Ile Leu Thr Thr Thr Ala Thr Leu				
263	268	273	278	
cca gct gtt gtc acg gtc acc acc agc gcc agc ggc tcc aag acc acc				918
Pro Ala Val Val Thr Val Thr Thr Ser Ala Ser Gly Ser Lys Thr Thr				
279	284	289	294	
gtc atc tct gct gtg ggc acc att gtg aag aag gcc aag cag tga cct				966
Val Ile Ser Ala Val Glu Gly Thr Ile Val Lys Lys Ala Lys Gln *				
295	300	305		

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 gcgccacttt gtatatttca ggactgggac ctactcccca gatgccacct gagaggagct 1086  
 tctgtttggc attccagatg gaaggacagg cagcacggga gccagggcgt gtggacaggg 1146  
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 gcatctcaga tgcaactggc tctcctgcat tctgtttgca ggcaaatgct tcagctcaca 1266  
 tgtcccccaa gactcaatag tcttggttgg gactattgcc tcaggggtga caacaggggtg 1326  
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 Val Leu Ser Ser Leu Ala Val Tyr Ala Glu Asp Ser Glu Pro Glu Ser  
 7 12 17 22  
 gat ggc gag gct gga atc gag gcg gtg ggc agc gcg gct gag gag aaa 150  
 Asp Gly Glu Ala Gly Ile Glu Ala Val Gly Ser Ala Ala Glu Glu Lys  
 23 28 33 38  
 ggc gga ttg gta tct gat gcc tat ggg gag gat gac ttt tct cgt cta 198  
 Gly Gly Leu Val Ser Asp Ala Tyr Gly Glu Asp Asp Phe Ser Arg Leu  
 39 44 49 54  
 ggg ggt gat gaa gat ggt tat gaa gaa gaa gaa gat gag aac agt aga 246  
 Gly Gly Asp Glu Asp Gly Tyr Glu Glu Glu Glu Asp Glu Asn Ser Arg  
 55 60 65 70  
 cag tcg aga cgg tgt ttc act atg ttt ccc agt ctg gtt tca aac ttc 294  
 Gln Ser Arg Arg Cys Phe Thr Met Phe Pro Ser Leu Val Ser Asn Phe  
 71 76 81 86  
 tgg cct caa gca att ccc ctg cct cac cct ccc aaa gtg ctg gga tta/ 342  
 Trp Pro Gln Ala Ile Pro Leu Pro His Pro Pro Lys Val Leu Gly Leu  
 87 92 97 102

cag gaa gat gac gat tca gag act gaa aaa cct gag gct gat gac cca	390
Gln Glu Asp Asp Asp Ser Glu Thr Glu Lys Pro Glu Ala Asp Asp Pro	
103 108 113 118	
aag gat aat aca gaa gca gaa aag cga gac ccc cag gaa ctc gtg gcc	438
Lys Asp Asn Thr Glu Ala Glu Lys Arg Asp Pro Gln Glu Leu Val Ala	
119 124 129 134	
tcc ttt tct gaa aga gtt cgg aac atg tcg cct gat gaa atc aag atc	486
Ser Phe Ser Glu Arg Val Arg Asn Met Ser Pro Asp Glu Ile Lys Ile	
135 140 145 150	
ccg cca gaa ccc cct ggc aga tgt tca aat cac ttg caa gac aag atc	534
Pro Pro Glu Pro Pro Gly Arg Cys Ser Asn His Leu Gln Asp Lys Ile	
151 156 161 166	
cag aag ctt tat gaa cga aag ata aag gag gga atg gat atg aac tac	582
Gln Lys Leu Tyr Glu Arg Lys Ile Lys Glu Gly Met Asp Met Asn Tyr	
167 172 177 182	
att atc caa agg aag aaa gaa ttt cgg aac cct agc atc tac gag aag	630
Ile Ile Gln Arg Lys Lys Glu Phe Arg Asn Pro Ser Ile Tyr Glu Lys	
183 188 193 198	
ctg atc cag ttc tgt gcc att gac gag ctt ggc acc aac tac cca aag	678
Leu Ile Gln Phe Cys Ala Ile Asp Glu Leu Gly Thr Asn Tyr Pro Lys	
199 204 209 214	
gat atg ttt gat ccc cat ggc tgg tct gag gac tcc tac tat gag gca	726
Asp Met Phe Asp Pro His Gly Trp Ser Glu Asp Ser Tyr Tyr Glu Ala	
215 220 225 230	
tta gcc aag gcc cag aaa att gag atg gac aaa ttg gaa aag gcc aaa	774
Leu Ala Lys Ala Gln Lys Ile Glu Met Asp Lys Leu Glu Lys Ala Lys	
231 236 241 246	
aag gag cga aca aaa gct tgt tgc agg gac gtg tct gca gcg cct ggg	822
Lys Glu Arg Thr Lys Ala Cys Cys Arg Asp Val Ser Ala Ala Pro Gly	
247 252 257 262	
gaa ccg agc tgt cct tcc cct gtg cgg gcg ggc acc gcc tcc tcc tgg	870
Glu Pro Ser Cys Pro Ser Pro Val Arg Ala Gly Thr Ala Ser Ser Trp	
263 268 273 278	
att gag ttt gtg acg ggc acc aaa aaa ggc acc acg acc aac gcc aca	918
Ile Glu Phe Val Thr Gly Thr Lys Lys Gly Thr Thr Thr Asn Ala Thr	
279 284 289 294	
tcc acc acc act acc act gcc agc aaa gct gtt gca gat gct cag aag	966
Ser Thr Thr Thr Thr Thr Ala Ser Lys Ala Val Ala Asp Ala Gln Lys	
295 300 305 310	
aga aag agc aag tgg gat tcg gct atc cca gtg aca acg ata gcc cag	1014
Arg Lys Ser Lys Trp Asp Ser Ala Ile Pro Val Thr Thr Ile Ala Gln	
311 316 321 326	

ccc acc atc ctc acc acc aca gcc acc ctg cca gct gtt gtc acg gtc 1062  
Pro Thr Ile Leu Thr Thr Thr Ala Thr Leu Pro Ala Val Val Thr Val  
327 332 337 342

acc acc agc gcc agc ggc tcc aag acc acc gtc atc tct gct gtg ggc 1110  
Thr Thr Ser Ala Ser Gly Ser Lys Thr Thr Val Ile Ser Ala Val Gly  
343 348 353 358

acc att gtg aag aag gcc aag cag tga cctga gggggccaccc taggacttga 1162  
Thr Ile Val Lys Lys Ala Lys Gln \*  
359 364

aaggaccgtg cagcccagtg accactgccc agtgggaggc gccactttgt atatttcagg 1222

actgggacct actccccaga tgccacctga gaggagcttc tgtttggcat tccagatgga 1282

aggacaggca gcacgggagc caggcgctgt ggacagggtc tgtccacgca ccacctgggg 1342

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gtt ctg tcg tct ctc gca gtt tac gcg gaa gat tca gag ccc gag tct 102  
Val Leu Ser Ser Leu Ala Val Tyr Ala Glu Asp Ser Glu Pro Glu Ser  
7 12 17 22

gat ggc gag gct gga atc gag gcg gtg ggc agc gcg gct gag gag aaa 150  
Asp Gly Glu Ala Gly Ile Glu Ala Val Gly Ser Ala Ala Glu Glu Lys  
23 28 33 38

ggc gga ttg gta tct gat gcc tat ggg gag gat gac ttt tct cgt cta 198  
Gly Gly Leu Val Ser Asp Ala Tyr Gly Glu Asp Asp Phe Ser Arg Leu  
39 44 49 54

ggg ggt gat gaa gat ggt tat gaa gaa gaa gaa gat gag aac agt aga 246  
Gly Gly Asp Glu Asp Gly Tyr Glu Glu Glu Glu Asp Glu Asn Ser Arg

55	60	65	70	
cag tcg gat aat aca gaa gca gaa aag cga gac ccc cag gaa ctc gtg				294
Gln Ser Asp Asn Thr Glu Ala Glu Lys Arg Asp Pro Gln Glu Leu Val				
71	76	81	86	
gcc tcc ttt tct gaa aga gtt cgg aac atg tcg cct gat gaa atc aag				342
Ala Ser Phe Ser Glu Arg Val Arg Asn Met Ser Pro Asp Glu Ile Lys				
87	92	97	102	
atc ccg cca gaa ccc cct ggc aga tgt tca aat cac ttg caa gac aag				390
Ile Pro Pro Glu Pro Pro Gly Arg Cys Ser Asn His Leu Gln Asp Lys				
103	108	113	118	
atc cag aag ctt tat gaa cga aag ata aag gag gga atg gat atg aac				438
Ile Gln Lys Leu Tyr Glu Arg Lys Ile Lys Glu Gly Met Asp Met Asn				
119	124	129	134	
tac att atc caa agg aag aaa gaa ttt cgg aac cct agc atc tac gag				486
Tyr Ile Ile Gln Arg Lys Lys Glu Phe Arg Asn Pro Ser Ile Tyr Glu				
135	140	145	150	
aag ctg atc cag ttc tgt gcc att gac gag ctt ggc acc aac tac cca				534
Lys Leu Ile Gln Phe Cys Ala Ile Asp Glu Leu Gly Thr Asn Tyr Pro				
151	156	161	166	
aag gat atg ttt gat ccc cat ggc tgg tct gag gac tcc tac tat gag				582
Lys Asp Met Phe Asp Pro His Gly Trp Ser Glu Asp Ser Tyr Tyr Glu				
167	172	177	182	
gca tta gcc aag gcc cag aaa att gag atg gac aaa ttg gaa aag gcc				630
Ala Leu Ala Lys Ala Gln Lys Ile Glu Met Asp Lys Leu Glu Lys Ala				
183	188	193	198	
aaa aag gag cga aca aaa att gag ttt gtg acg ggc acc aaa aaa ggc				678
Lys Lys Glu Arg Thr Lys Ile Glu Phe Val Thr Gly Thr Lys Lys Gly				
199	204	209	214	
acc acg acc aac gcc acg tcc acc acc act acc act gcc agc aca gct				726
Thr Thr Thr Asn Ala Thr Ser Thr Thr Thr Thr Thr Ala Ser Thr Ala				
215	220	225	230	
gtt gca gat gct cag aag aga aag agc aag tgg gat tcg gct atc cca				774
Val Ala Asp Ala Gln Lys Arg Lys Ser Lys Trp Asp Ser Ala Ile Pro				
231	236	241	246	
gtg aca acg ata gcc cag ccc acc atc ctc acc acc aca gcc acc ctg				822
Val Thr Thr Ile Ala Gln Pro Thr Ile Leu Thr Thr Thr Ala Thr Leu				
247	252	257	262	
cca gct gtt gtc acg gtc acc acc agc gcc agc ggc tcc aag acc acc				870
Pro Ala Val Val Thr Val Thr Thr Ser Ala Ser Gly Ser Lys Thr Thr				
263	268	273	278	
gtc atc tct gct gtg ggc acc att gtg aag aag gcc aag cag tga cct				918
Val Ile Ser Ala Val Gly Thr Ile Val Lys Lys Ala Lys Gln *				
279	284	289		

gagggggccac cctaggactt gaaaggaccg tgcagcccag tgaccactgc ccagtgggag 978  
gcgccacttt gtatatattca ggactgggac ctactcccca gatgccacct gagaggagct 1038  
tctgtttggc attccagatg gaaggacagg cagcacggga gccaggcgct gtggacaggg 1098  
tctgtccacg caccacctgg ggtctgccgc ctattaaag tgccgtattc ttacctcttg 1158  
gcatctcaga tgcaactggcc tctcctgcat tctgtttgca ggcaaatgct tcagctcaca 1218  
tgtcccccaa gactcaatag tcttggttgg gactattgcc tcagggttga caacaggggtg 1278  
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at 1340

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<212> DNA  
<213> Homo sapiens

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caaaaaaaga gatctctcga ggatccgaat tcgcgggccgc gtcgacgagc aac atg 116  
Met  
1  
ccc aag ttt tat tgt gac tac tgc gat aca tac ctc acc cat gac tct 164  
Pro Lys Phe Tyr Cys Asp Tyr Cys Asp Thr Tyr Leu Thr His Asp Ser  
2 7 12 17  
cca tct gtg aga aag aca cac tgc agt gga agg aaa cac aaa gag aat 212  
Pro Ser Val Arg Lys Thr His Cys Ser Gly Arg Lys His Lys Glu Asn  
18 23 28 33  
gtg aaa gac tat tat cag aaa tgg atg gaa gag cag gct cag agc ctg 260  
Val Lys Asp Tyr Tyr Gln Lys Trp Met Glu Glu Gln Ala Gln Ser Leu  
34 39 44 49  
att gac aaa aca acg gct gca ttt caa caa gga aag ata cct cct act 308  
Ile Asp Lys Thr Thr Ala Ala Phe Gln Gln Gly Lys Ile Pro Pro Thr  
50 55 60 65  
cca ttc tct gct cct cct cct gca ggg gcg atg ata cca cct ccc ccc 356  
Pro Phe Ser Ala Pro Pro Pro Ala Gly Ala Met Ile Pro Pro Pro Pro  
66 71 76 81  
agc ctt ccg ggt cct cct cgc cct ggt atg atg cca gca ccc cat atg 404

Ser Leu Pro Gly Pro Pro Arg Pro Gly Met Met Pro Ala Pro His Met  
82 87 92 97

ggg ggc cct ccc atg atg cca atg atg ggc cct cct cct cct ggg atg 452  
Gly Gly Pro Pro Met Met Pro Met Met Gly Pro Pro Pro Pro Gly Met  
98 103 108 113

atg cca gtg gga cct gct cct gga atg agg ccg ccc atg gga ggc cat 500  
Met Pro Val Gly Pro Ala Pro Gly Met Arg Pro Pro Met Gly Gly His  
114 119 124 129

atg cca atg atg cct ggg ccc cca atg atg aga cct cct gcc cgt ccc 548  
Met Pro Met Met Pro Gly Pro Pro Met Met Arg Pro Pro Ala Arg Pro  
130 135 140 145

atg atg gtg ccc act cgg ccc gga atg act cga cca gac aga taa gga 596  
Met Met Val Pro Thr Arg Pro Gly Met Thr Arg Pro Asp Arg \*  
146 151 156

tagaggggag gccttattgt atcggtttta tatttatatt ctgcttcacc aggagatcat 656

gctgctgtga tactgagttt tctaaacagc ataaggaaga cttgctcccc tgtcctatga 716

aagagaatag ttttggaggg gagaagtggg acaaaaaaga tgcagttttc ctttgtattg 776

ggaaatgtga aaataaaatt gtcaactctt tcagttaata aaaaaaaaaa a 827

<210> 523

<211> 1612

<212> DNA

<213> Homo sapiens

<220>

<221> CDS

<222> (248) .. (994)

<400> 523

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aagcaatgct gtctgtgaat aacatggcta atttcttcgt aggggtgattt ctaacctaga 180

agcaagaaat ttggggccaa gattaacacc cctcctgcag gaggaagaca gccaccagcg 240

gctgctc atg ggg ctg atg gtg tct gag cta aaa gac cat ttt ttg aga 289  
Met Gly Leu Met Val Ser Glu Leu Lys Asp His Phe Leu Arg  
1 5 10

cac cta cag ggt gta gaa aag aag aaa att gaa cag atg gtt ctg gac 337  
His Leu Gln Gly Val Glu Lys Lys Lys Ile Glu Gln Met Val Leu Asp  
15 20 25 30

tac att tca aaa ctg ctg gat ctc att tgc cac atc gta gaa acc aat 385



Tyr	Ile	Ser	Lys	Leu	Leu	Asp	Leu	Ile	Cys	His	Ile	Val	Glu	Thr	Asn		
31					36					41					46		
tgg	agg	aaa	cat	aat	ctt	cat	tcc	tgg	gtt	ctc	cac	ttc	aat	agt	cgt		433
Trp	Arg	Lys	His	Asn	Leu	His	Ser	Trp	Val	Leu	His	Phe	Asn	Ser	Arg		
47					52					57					62		
ggc	agt	gct	gct	gaa	ttt	gca	gtt	ttt	cac	atc	atg	acc	agg	att	ctg		481
Gly	Ser	Ala	Ala	Glu	Phe	Ala	Val	Phe	His	Ile	Met	Thr	Arg	Ile	Leu		
63					68					73					78		
gaa	gct	aca	aac	agt	ttg	ttt	tta	cct	ctg	cct	cct	ggt	ttt	cat	act		529
Glu	Ala	Thr	Asn	Ser	Leu	Phe	Leu	Pro	Leu	Pro	Pro	Gly	Phe	His	Thr		
79					84					89					94		
ctg	cac	acc	atc	ctc	ggg	gtc	cag	tgt	ctc	cct	ttg	cat	aac	ctg	ctg		577
Leu	His	Thr	Ile	Leu	Gly	Val	Gln	Cys	Leu	Pro	Leu	His	Asn	Leu	Leu		
95					100					105					110		
cat	tgc	att	gac	agt	gga	gtg	ttg	ctt	ctc	act	gaa	aca	gct	gtc	ata		625
His	Cys	Ile	Asp	Ser	Gly	Val	Leu	Leu	Leu	Thr	Glu	Thr	Ala	Val	Ile		
111					116					121					126		
agg	ctc	atg	aaa	gat	ctg	gat	aat	aca	gag	aaa	aat	gaa	aaa	ctg	aaa		673
Arg	Leu	Met	Lys	Asp	Leu	Asp	Asn	Thr	Glu	Lys	Asn	Glu	Lys	Leu	Lys		
127					132					137					142		
ttc	agt	atc	att	gtg	cgg	ctt	cct	ccg	ctt	att	ggg	cag	aag	att	tgt		721
Phe	Ser	Ile	Ile	Val	Arg	Leu	Pro	Pro	Leu	Ile	Gly	Gln	Lys	Ile	Cys		
143					148					153					158		
aga	ctt	tgg	gat	cat	cct	atg	agt	tct	aac	atc	att	tcg	cgg	aac	cac		769
Arg	Leu	Trp	Asp	His	Pro	Met	Ser	Ser	Asn	Ile	Ile	Ser	Arg	Asn	His		
159					164					169					174		
gtg	acg	cga	ctg	ctt	cag	aac	tat	aag	aaa	cag	cct	cgg	aat	tct	atg		817
Val	Thr	Arg	Leu	Leu	Gln	Asn	Tyr	Lys	Lys	Gln	Pro	Arg	Asn	Ser	Met		
175					180					185					190		
att	aac	aag	tca	tcg	ttc	agt	gta	gaa	ttt	ctg	cct	ctg	aac	tac	ttc		865
Ile	Asn	Lys	Ser	Ser	Phe	Ser	Val	Glu	Phe	Leu	Pro	Leu	Asn	Tyr	Phe		
191					196					201					206		
att	gaa	att	ctg	aca	gat	ata	gag	tcc	tcc	aat	caa	gcc	ctg	tat	cct		913
Ile	Glu	Ile	Leu	Thr	Asp	Ile	Glu	Ser	Ser	Asn	Gln	Ala	Leu	Tyr	Pro		
207					212					217					222		
ttt	gaa	gga	cat	gac	aat	gtg	gat	gca	gaa	ttt	gta	gag	gaa	gca	gct		961
Phe	Glu	Gly	His	Asp	Asn	Val	Asp	Ala	Glu	Phe	Val	Glu	Glu	Ala	Ala		
223					228					233					238		
ctg	aaa	cac	acc	gcg	atg	ctt	tta	ggc	tta	tga	aaaagaaa	acgcaattgg					1012
Leu	Lys	His	Thr	Ala	Met	Leu	Leu	Gly	Leu	*							
239					244					249							
atctgctgct	gccatttttaa	tcttgcctcat	taaccttact	cctttgagaa	ttctttaaca												1072

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 gttggtacac gttcagacag aactgctgta tcacattcca attttgaata gccagtgagc 1192  
 aatcaagtgt agagaaatga taaatggcct aagaaggcat acagtggcat aaacgatgct 1252  
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 tgaatttgta ctaaatacaga tttgccatgt ccagtacaga ataatttgta cttagtattt 1492  
 gcagcagggt ttgtctttgt gaattcagat gaaacatatt tttttttttt tatttataaa 1552  
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 <222> (3)..(866)

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 cgg gca gac ccg gag gga acg gag gaa gcg gtc atg tct cgc tac acg 95  
 Arg Ala Asp Pro Glu Gly Thr Glu Glu Ala Val Met Ser Arg Tyr Thr  
 16 21 26 31  
 agg ccc ccc aac acc tcc ctg ttc atc agg aac gtc gcg gac gcc acc 143  
 Arg Pro Pro Asn Thr Ser Leu Phe Ile Arg Asn Val Ala Asp Ala Thr  
 32 37 42 47  
 agg cct gag gac ttg cgc cgt gag ttt ggt cga tat ggc cct ata gta 191  
 Arg Pro Glu Asp Leu Arg Arg Glu Phe Gly Arg Tyr Gly Pro Ile Val  
 48 53 58 63  
 gac gtt tac att cca ctt gac ttc tac act cgc cgc cca aga gga ttt 239  
 Asp Val Tyr Ile Pro Leu Asp Phe Tyr Thr Arg Arg Pro Arg Gly Phe  
 64 69 74 79  
 gct tat gtt caa ttt gaa gat gtt cga gat gct gaa gat gct ctt tat 287  
 Ala Tyr Val Gln Phe Glu Asp Val Arg Asp Ala Glu Asp Ala Leu Tyr  
 80 85 90 95  
 aac ctc aat aga aag tgg gta tgt ggc cgt cag att gaa ata cag ttt 335  
 Asn Leu Asn Arg Lys Trp Val Cys Gly Arg Gln Ile Glu Ile Gln Phe

96	101	106	111	
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Ala Gln Gly Asp Arg Lys Thr Pro Gly Gln Met Lys Ser Lys Glu Arg				
112	117	122	127	
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His Pro Cys Ser Pro Ser Asp His Arg Arg Ser Arg Ser Pro Ser Gln				
128	133	138	143	
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Arg Arg Thr Arg Ser Arg Ser Ser Ser Trp Gly Arg Asn Arg Arg Arg				
144	149	154	159	
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Ser Asp Ser Leu Lys Glu Ser Arg His Arg Arg Phe Ser Tyr Ser Gln				
160	165	170	175	
tct aaa tct cgt tcc aaa tca tta cca agg cgg tct acc tca gca agg				575
Ser Lys Ser Arg Ser Lys Ser Leu Pro Arg Arg Ser Thr Ser Ala Arg				
176	181	186	191	
cag tca aga act cca aga agg aat ttt ggc tct aga gga cgg tca agg				623
Gln Ser Arg Thr Pro Arg Arg Asn Phe Gly Ser Arg Gly Arg Ser Arg				
192	197	202	207	
tcc aag tcc tta caa aag agg tcc aag tca ata gga aaa tca cag tca				671
Ser Lys Ser Leu Gln Lys Arg Ser Lys Ser Ile Gly Lys Ser Gln Ser				
208	213	218	223	
agt tca cct caa aag cag act agc tca gga aca aaa tca aga tca cat				719
Ser Ser Pro Gln Lys Gln Thr Ser Ser Gly Thr Lys Ser Arg Ser His				
224	229	234	239	
gga aga cat tct gac tca ata gca aga tcc ccg tgt aaa tct ccc aaa				767
Gly Arg His Ser Asp Ser Ile Ala Arg Ser Pro Cys Lys Ser Pro Lys				
240	245	250	255	
ggg tat acc aat tct gaa act aaa gta caa aca gca aag cat tct cat				815
Gly Tyr Thr Asn Ser Glu Thr Lys Val Gln Thr Ala Lys His Ser His				
256	261	266	271	
ttt cgg tca cat tcc aga tct cga agt tat cgt cat aaa aac agt tgg				863
Phe Arg Ser His Ser Arg Ser Arg Ser Tyr Arg His Lys Asn Ser Trp				
272	277	282	287	
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*				
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atttatatca ccagcttgc ttttgcgcgc aaagcttcct gccctggaag atggcacct      240
tccccatcca gacaccttgg ga atg aat tat gag gga gcc agg agt gag aga      292
                               Met Asn Tyr Glu Gly Ala Arg Ser Glu Arg
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gag aac cac gct gct gat gac tcc gag gga ggg gcc ctg gac atg tgc      340
Glu Asn His Ala Ala Asp Asp Ser Glu Gly Gly Ala Leu Asp Met Cys
 11                               16                               21                               26

tgc agt gag agg cta ccg ggt ctc ccc cag ccg ata gtg atg gag gca      388
Cys Ser Glu Arg Leu Pro Gly Leu Pro Gln Pro Ile Val Met Glu Ala
 27                               32                               37                               42

ctg gac gag gct gaa ggg ctc cag gac tca cag aga gag atg ccg cca      436
Leu Asp Glu Ala Glu Gly Leu Gln Asp Ser Gln Arg Glu Met Pro Pro
 43                               48                               53                               58

ccc cct cct ccc tcg ccg ccc tca gat cca gct cag aag cca cca cct      484
Pro Pro Pro Pro Ser Pro Pro Ser Asp Pro Ala Gln Lys Pro Pro Pro
 59                               64                               69                               74

cga ggc gct ggg agc cac tcc ctc act gtc agg agc agc ctg tgc ctg      532
Arg Gly Ala Gly Ser His Ser Leu Thr Val Arg Arg Ser Ser Leu Cys Leu
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ttc gct gcc tca cag ttc ctg ctt gcc tgt ggg gtg ctc tgg ttc agc      580
Phe Ala Ala Ser Gln Phe Leu Leu Ala Cys Gly Val Leu Trp Phe Ser
 91                               96                               101                               106

ggc tat ggc cac atc tgg tca cag aac gcc aca aac ctc gtc tcc tct      628
Gly Tyr Gly His Ile Trp Ser Gln Asn Ala Thr Asn Leu Val Ser Ser
107                               112                               117                               122

ttg ctg acg ctc ctg aaa cag ctg gaa ccc acg gcc tgg ctt gac tct      676
Leu Leu Thr Leu Leu Lys Gln Leu Glu Pro Thr Ala Trp Leu Asp Ser
123                               128                               133                               138

ggg acg tgg gga gtc ccc agt ctg ctg ctg gtc ttt ctg tcc gtg ggc      724
Gly Thr Trp Gly Val Pro Ser Leu Leu Leu Val Phe Leu Ser Val Gly
139                               144                               149                               154

ctg gtc ctc gtt acc acc ctg gtg tgg cac ctc ctg agg aca ccc cca      772

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Leu Val Leu Val Thr Thr Leu Val Trp His Leu Leu Arg Thr Pro Pro	
155 160 165 170	
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Glu Pro Pro Thr Pro Leu Pro Pro Glu Asp Arg Arg Gln Ser Val Ser	
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Arg Gln Pro Ser Phe Thr Tyr Ser Glu Trp Met Glu Glu Lys Ile Glu	
187 192 197 202	
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Asp Asp Phe Leu Asp Leu Asp Pro Val Pro Glu Thr Pro Val Phe Asp	
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tgt gtg atg gac atc aag cct gag gct gac ccc acc tca ctc acc gtc	964
Cys Val Met Asp Ile Lys Pro Glu Ala Asp Pro Thr Ser Leu Thr Val	
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Lys Ser Met Gly Leu Gln Glu Arg Arg Gly Ser Asn Val Ser Leu Thr	
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Leu Asp Met Cys Thr Pro Gly Cys Asn Glu Glu Gly Phe Gly Tyr Leu	
251 256 261 266	
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Met Ser Pro Arg Glu Glu Ser Ala Arg Glu Tyr Leu Leu Ser Ala Ser	
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aaa gag tac gac atc cct ggg ctg gtg cgg aag aac cgg tac aaa acc	1252
Lys Glu Tyr Asp Ile Pro Gly Leu Val Arg Lys Asn Arg Tyr Lys Thr	
315 320 325 330	
ata ctt ccc aac cct cac agc aga gtg tgt ctg acc tca cca gac cct	1300
Ile Leu Pro Asn Pro His Ser Arg Val Cys Leu Thr Ser Pro Asp Pro	
331 336 341 346	
gac gac cct ctg agt tcc tac atc aat gcc aac tac atc cgg ggc tat	1348
Asp Asp Pro Leu Ser Ser Tyr Ile Asn Ala Asn Tyr Ile Arg Gly Tyr	
347 352 357 362	
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Gly Gly Glu Glu Lys Val Tyr Ile Ala Thr Gln Gly Pro Ile Val Ser	
363 368 373 378	
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Thr Val Ala Asp Phe Trp Arg Met Val Trp Gln Glu His Thr Pro Ile	

379	384	389	394	
att gtc atg atc acc aac atc gag gag atg aac gag aaa tgc acc gag				1492
Ile Val Met Ile Thr Asn Ile Glu Glu Met Asn Glu Lys Cys Thr Glu				
395	400	405	410	
tat tgg ccg gag gag cag gtg gcg tac gac ggt gtt gag atc act gtg				1540
Tyr Trp Pro Glu Glu Gln Val Ala Tyr Asp Gly Val Glu Ile Thr Val				
411	416	421	426	
cag aaa gtc att cac acg gag gat tac cgg ctg cga ctc atc tcc ctc				1588
Gln Lys Val Ile His Thr Glu Asp Tyr Arg Leu Arg Leu Ile Ser Leu				
427	432	437	442	
aag agt ggg act gag gag cga ggc ctg aag cat tac tgg ttc aca tcc				1636
Lys Ser Gly Thr Glu Glu Arg Gly Leu Lys His Tyr Trp Phe Thr Ser				
443	448	453	458	
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Trp Pro Asp Gln Lys Thr Pro Asp Arg Ala Pro Pro Leu Leu His Leu				
459	464	469	474	
gtg cgg gag gtg gag gag gca gcc cag cag gag ggg ccc cac tgt gcc				1732
Val Arg Glu Val Glu Glu Ala Ala Gln Gln Glu Gly Pro His Cys Ala				
475	480	485	490	
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Pro Ile Ile Val His Cys Ser Ala Gly Ile Gly Arg Thr Gly Cys Phe				
491	496	501	506	
att gcc acc agc atc tgc tgc cag cag ctg cgg cag gag ggt gta gtg				1828
Ile Ala Thr Ser Ile Cys Cys Gln Gln Leu Arg Gln Glu Gly Val Val				
507	512	517	522	
gac atc ctg aag acc acg tgc cag ctc cgt cag gac agg ggc ggc atg				1876
Asp Ile Leu Lys Thr Thr Cys Gln Leu Arg Gln Asp Arg Gly Gly Met				
523	528	533	538	
atc cag cac tgc gag cag tac cag ttt gtg cac cac gtc atg agc ctc				1924
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539	544	549	554	
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Tyr Glu Lys Gln Leu Ser His Gln Ser Pro Glu *				
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 ccccgccgc tcctccgcgc cgcgctcgtc ggcc atg gcc cgg gag aac gcc 232  
 Met Ala Arg Glu Asn Gly  
 1  
 gag agc agc tcc tcc tgg aaa aag caa gct gaa gac atc aag aag atc 280  
 Glu Ser Ser Ser Ser Trp Lys Lys Gln Ala Glu Asp Ile Lys Lys Ile  
 7 12 17 22  
 ttc gag ttc aaa gag acc ctc gga acc ggg gcc ttt tcc gaa gtg gtt 328  
 Phe Glu Phe Lys Glu Thr Leu Gly Thr Gly Ala Phe Ser Glu Val Val  
 23 28 33 38  
 tta gct gaa gag aag gca act ggc aag ctc ttt gct gtg aag tgt atc 376  
 Leu Ala Glu Glu Lys Ala Thr Gly Lys Leu Phe Ala Val Lys Cys Ile  
 39 44 49 54  
 cct aag aag gcg ctg aag ggc aag gaa agc agc ata gag aat gag ata 424  
 Pro Lys Lys Ala Leu Lys Gly Lys Glu Ser Ser Ile Glu Asn Glu Ile  
 55 60 65 70  
 gcc gtc ctg aga aag att aag cat gaa aat att gtt gcc ctg gaa gac 472  
 Ala Val Leu Arg Lys Ile Lys His Glu Asn Ile Val Ala Leu Glu Asp  
 71 76 81 86  
 att tat gaa agc cca aat cac ctg tac ttg gtc atg cag ctg gtg tcc 520  
 Ile Tyr Glu Ser Pro Asn His Leu Tyr Leu Val Met Gln Leu Val Ser  
 87 92 97 102

ggt gga gag ctg ttt gac cgg ata gtg gag aag ggg ttt tat aca gag	568
Gly Gly Glu Leu Phe Asp Arg Ile Val Glu Lys Gly Phe Tyr Thr Glu	
103 108 113 118	
aag gat gcc agc act ctg atc cgc caa gtc ttg gac gcc gtg tac tat	616
Lys Asp Ala Ser Thr Leu Ile Arg Gln Val Leu Asp Ala Val Tyr Tyr	
119 124 129 134	
ctc cac aga atg ggc atc gtc cac aga gac ctc aag ccc gaa aat ctc	664
Leu His Arg Met Gly Ile Val His Arg Asp Leu Lys Pro Glu Asn Leu	
135 140 145 150	
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Leu Tyr Tyr Ser Gln Asp Glu Glu Ser Lys Ile Met Ile Ser Asp Phe	
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gga ttg tca aaa atg gag ggc aaa gga gat gtg atg tcc act gcc tgt	760
Gly Leu Ser Lys Met Glu Gly Lys Gly Asp Val Met Ser Thr Ala Cys	
167 172 177 182	
gga act cca ggc tat gtc gct cct gaa gtc ctc gcc cag aaa cct tac	808
Gly Thr Pro Gly Tyr Val Ala Pro Glu Val Leu Ala Gln Lys Pro Tyr	
183 188 193 198	
agc aaa gcc gtt gac tgc tgg tcc atc gga gtg att gcc tac atc ttg	856
Ser Lys Ala Val Asp Cys Trp Ser Ile Gly Val Ile Ala Tyr Ile Leu	
199 204 209 214	
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Leu Cys Gly Tyr Pro Pro Phe Tyr Asp Glu Asn Asp Ser Lys Leu Phe	
215 220 225 230	
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Glu Gln Ile Leu Lys Ala Glu Tyr Glu Phe Asp Ser Pro Tyr Trp Asp	
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Asp Ile Ser Asp Ser Ala Lys Asp Phe Ile Arg Asn Leu Met Glu Lys	
247 252 257 262	
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Asp Pro Asn Lys Arg Tyr Thr Cys Glu Gln Ala Ala Arg His Pro Trp	
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Ile Ala Gly Asp Thr Ala Leu Asn Lys Asn Ile His Glu Ser Val Ser	
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gcc cag atc cgg aaa aac ttt gcc aag agc aaa tgg aga caa gca ttt	1144
Ala Gln Ile Arg Lys Asn Phe Ala Lys Ser Lys Trp Arg Gln Ala Phe	
295 300 305 310	
aat gcc acg gcc gtc gtg aga cat atg aga aaa cta cac ctc ggc agc	1192
Asn Ala Thr Ala Val Val Arg His Met Arg Lys Leu His Leu Gly Ser	
311 316 321 326	



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Ser Gln Lys Asp Cys Leu Ala Pro Ser Thr Leu Cys Ser Phe Ile Ser	
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tct tgc tgc ggg gtc tca gga gtt gga gcc gag cgg aga ccc agg ccc	1336
Ser Ser Ser Gly Val Ser Gly Val Gly Ala Glu Arg Arg Pro Arg Pro	
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Met Ala Arg	
1	
cta ccg aag ctg gca gtc ttt gat ttg gat tac act ctc tgg cct ttc	165
Leu Pro Lys Leu Ala Val Phe Asp Leu Asp Tyr Thr Leu Trp Pro Phe	
4 9 14 19	
tgg gtc gac acg cac gta gac cct ccg ttc cat aag agc agt gat gga	213
Trp Val Asp Thr His Val Asp Pro Pro Phe His Lys Ser Ser Asp Gly	
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Thr Val Arg Asp Arg Arg Gly Gln Asp Val Arg Leu Tyr Pro Glu Val	

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cct gag gtc cta aaa cga ttg cag agc ctt ggg gtg ccc ggt gcg gct				309
Pro Glu Val Leu Lys Arg Leu Gln Ser Leu Gly Val Pro Gly Ala Ala				
52	57	62	67	
gct tca agg aca agt gag ata gaa ggg gcc aac cag cta ctg gag ctc				357
Ala Ser Arg Thr Ser Glu Ile Glu Gly Ala Asn Gln Leu Leu Glu Leu				
68	73	78	83	
ttt gac ctc ttc agg tac ttt gtt cat cgg gaa atc tat cca ggc agc				405
Phe Asp Leu Phe Arg Tyr Phe Val His Arg Glu Ile Tyr Pro Gly Ser				
84	89	94	99	
aag atc aca cac ttt gag agg ttg cag cag aag act gga att cct ttc				453
Lys Ile Thr His Phe Glu Arg Leu Gln Gln Lys Thr Gly Ile Pro Phe				
100	105	110	115	
tcc cag atg atc ttc ttt gat gat gag agg cgg aat att gta gac gtc				501
Ser Gln Met Ile Phe Phe Asp Asp Glu Arg Arg Asn Ile Val Asp Val				
116	121	126	131	
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Ser Lys Leu Gly Val Thr Cys Ile His Ile Gln Asn Gly Met Asn Leu				
132	137	142	147	
caa act cta agt caa ggg tta gag aca ttt gcg aag gcc caa act ggg				597
Gln Thr Leu Ser Gln Gly Leu Glu Thr Phe Ala Lys Ala Gln Thr Gly				
148	153	158	163	
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Pro Leu Arg Ser Ser Leu Glu Glu Ser Pro Phe Glu Ala *				
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Ser Leu Arg Ala Gly Lys Arg Arg Gln Thr Ala Gly Lys Ser Lys Ser	
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Pro Pro Lys Val Pro Ile Val Ile Gln Asp Asp Ser Leu Pro Ala Gly	
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Leu Ala Gln Arg Glu Ala Glu Tyr Ala Glu Ala Arg Lys Arg Ile Leu	
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ggc agc gcc agc ccc gag gag gag cag gag aaa ccc atc ctc gac agg	403
Gly Ser Ala Ser Pro Glu Glu Glu Gln Glu Lys Pro Ile Leu Asp Arg	
84 89 94 99	
cca acc agg atc tcc caa ccc gaa gac agc agg cag ccc aat aat gtg	451
Pro Thr Arg Ile Ser Gln Pro Glu Asp Ser Arg Gln Pro Asn Asn Val	
100 105 110 115	
atc aga cag cct ttg ggt cct gat ggg tct caa ggc ttc aaa cag cgc	499
Ile Arg Gln Pro Leu Gly Pro Asp Gly Ser Gln Gly Phe Lys Gln Arg	
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Arg *	
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 Met Ala Pro Gln Lys Asp Arg Lys Pro Lys Arg Ser Thr Trp Arg Phe  
 1 5 10 15  
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 Asn Leu Asp Leu Thr His Pro Val Glu Asp Gly Ile Phe Asp Ser Gly  
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 Asn Phe Glu Gln Phe Leu Arg Glu Lys Val Lys Val Asn Gly Lys Thr  
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 Gly Asn Leu Gly Asn Val Val His Ile Glu Arg Phe Lys Asn Lys Ile  
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 Thr Val Val Ser Glu Lys Gln Phe Ser Lys Arg Tyr Leu Lys Tyr Leu  
 65 70 75 80  
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 Thr Lys Lys Tyr Leu Lys Lys Asn Asn Leu Arg Asp Trp Leu Arg Val

81	86	91	96	
gtt gca tct gac aag gag acc tac gaa ctt cgt tac ttc cag att agt				453
Val Ala Ser Asp Lys Glu Thr Tyr Glu Leu Arg Tyr Phe Gln Ile Ser				
97	102	107	112	
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Gln Asp Glu Asp Glu Ser Glu Ser Glu Asp *				
113	118	123		
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	Met Lys Gln	
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Ile Leu Gly Val Ile Asp Lys Lys Leu Arg Asn Leu Glu Lys Lys Lys		
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Gly Lys Leu Asp Asp Tyr Gln Glu Arg Met Asn Lys Gly Glu Arg Leu		
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		35

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Gln Asp Ile Gln Lys Thr Ile Lys Lys Thr Ala Arg Arg Glu Gln Leu	
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Thr His Asn His Gln Asn Gly Leu Cys Glu Glu Glu Glu Ala Ala Ser	
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Ala Pro Ala Val Glu Asp Gln Val Pro Glu Ala Glu Pro Glu Pro Ala	
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Glu Glu Tyr Thr Glu Gln Ser Glu Val Glu Ser Thr Glu Tyr Val Asn	
228 233 238 243	
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244 249 254 259	
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Val Asp Glu Trp Thr	Val Glu Thr Val Glu Val Val Asn Ser Leu Gln	
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Gln Gln Pro Gln Ala Ala Ser Pro Ser Val Pro Glu Pro His Ser Leu		
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act cca gtg gct cag gca gat ccc ctt gtg aga aga cag cga gta caa		1506
Thr Pro Val Ala Gln Ala Asp Pro Leu Val Arg Arg Gln Arg Val Gln		
292	297 302	307
gac ctt atg gca caa atg cag ggt ccc tat aat ttc ata cag gat tca		1554
Asp Leu Met Ala Gln Met Gln Gly Pro Tyr Asn Phe Ile Gln Asp Ser		
308	313 318	323
atg ctg gat ttt gaa aat cag aca ctt gat cct gcc att gta tct gca		1602
Met Leu Asp Phe Glu Asn Gln Thr Leu Asp Pro Ala Ile Val Ser Ala		
324	329 334	339
cag cct atg aat cca aca caa aac atg gac atg ccc cag ctg gtt tgc		1650
Gln Pro Met Asn Pro Thr Gln Asn Met Asp Met Pro Gln Leu Val Cys		
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cct cca gtt cat tct gaa tct aga ctt gct cag cct aat caa gtt cct		1698
Pro Pro Val His Ser Glu Ser Arg Leu Ala Gln Pro Asn Gln Val Pro		
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Val Gln Pro Glu Ala Thr Gln Val Pro Leu Val Ser Ser Thr Ser Glu		
372	377 382	387
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Gly Tyr Thr Ala Ser Gln Pro Leu Tyr Gln Pro Ser His Ala Thr Glu		
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Gln Arg Pro Gln Lys Glu Pro Ile Asp Gln Ile Gln Ala Thr Ile Ser		
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Leu Asn Thr Asp Gln Thr Thr Ala Ser Ser Ser Leu Pro Ala Ala Ser		
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Gln Pro Gln Val Phe Gln Ala Gly Thr Ser Lys Pro Leu His Ser Ser		
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Asn Met Asn Ala Pro Val Pro Pro Val Asn Glu Pro Glu Thr Leu Lys		
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Gln Gln Asn Gln Tyr Gln Ala Ser Tyr Asn Gln Ser Phe Ser Ser Gln		

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Val Val Gly Thr Tyr His Gly Ser Pro Asp Gln Ser His Gln Val Thr				
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Ser Phe Leu Asn Leu Lys Ile Gln Glu Gly Glu Ala His Asn Ile Phe		
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Ala Ala Asn Cys Leu Trp Leu Leu Thr Asn Ser Lys Pro Cys Ala Asn		
170 175 180 185		

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Cys Lys Ser Pro Ile Gln Lys Asn Glu Gly Cys Asn His Met Gln Cys	
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Glu Lys Lys His Lys Arg Phe Gln Glu Leu Asp Arg Phe Met His Tyr	
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Pro	Gly	Thr	Ser	Val	Val	Ser	Ser	Ala	Ser	Met	Ser	Val	Leu	His	Ser	
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Ser	Ser	Leu	Arg	Asp	Tyr	Thr	Pro	Ala	Ser	Arg	Ser	Glu	Asn	Gln	Asp	
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Thr	Ser	Leu	Pro	Ser	Arg	Leu	Asp	Ser	Val	Pro	Arg	Asn	Thr	Asp	Ser	
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602					607					612					617	
agt	gat	cct	gac	tca	gct	ggc	cag	gac	ccc	aac	atc	aat	gac	aat	ctt	1923
Ser	Asp	Pro	Asp	Ser	Ala	Gly	Gln	Asp	Pro	Asn	Ile	Asn	Asp	Asn	Leu	
618					623					628					633	
ctc	ggc	aac	atc	atg	gct	tgg	ttt	cat	gac	atg	aac	cct	cag	agt	att	1971
Leu	Gly	Asn	Ile	Met	Ala	Trp	Phe	His	Asp	Met	Asn	Pro	Gln	Ser	Ile	

634	639	644	649	
gcc ctg att cct cca gca act aca gaa atc agt gca gat tcc cag ctc				2019
Ala Leu Ile Pro Pro Ala Thr Thr Glu Ile Ser Ala Asp Ser Gln Leu				
650	655	660	665	
ccc tgt atc aaa gat ggg tca gaa ggt gtg aag gat gtg gaa atg gtg				2067
Pro Cys Ile Lys Asp Gly Ser Glu Gly Val Lys Asp Val Glu Met Val				
666	671	676	681	
ctg cca gaa gat tca atg ttt gaa gat gcc agt gtc agt gaa ggt aga				2115
Leu Pro Glu Asp Ser Met Phe Glu Asp Ala Ser Val Ser Glu Gly Arg				
682	687	692	697	
gga acc cag ata gaa gaa aat cct ttg gaa gaa aat att ctg gcg ggg				2163
Gly Thr Gln Ile Glu Glu Asn Pro Leu Glu Glu Asn Ile Leu Ala Gly				
698	703	708	713	
gaa gca gca tct caa gct ggt gac agt ggt aac gag gca gcc aac aga				2211
Glu Ala Ala Ser Gln Ala Gly Asp Ser Gly Asn Glu Ala Ala Asn Arg				
714	719	724	729	
gga gat ggt tca gat gtt tca agt caa aca cct caa acc tca agt gac				2259
Gly Asp Gly Ser Asp Val Ser Ser Gln Thr Pro Gln Thr Ser Ser Asp				
730	735	740	745	
tgg ctt gaa caa gta cat tta gtg tga actgc acacatctgg gctctaaatg				2311
Trp Leu Glu Gln Val His Leu Val *				
746	751			
aattacaggt acagatggta tgctaggtgg agtatgcttg atagagactt tgattcactt				2371
aattccaact cagtataaa ccaactgacat taggggttgaa tacagagaag ttcccttgaa				2431
tggtagcttc atttttttatt ttaaccttac agggaatttc ctttgtactt aattgaatag				2491
cttttccct ttttctgac aaaaagaaga gcaagagaaa gagaaacaaa aatgaaataa				2551
ataagttgta ttccacactc taagaaaatg cagtcctcta tttagcctag gcttgacaat				2611
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aaaaaaaaa a				2682

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Lys Glu Leu Asp Glu Tyr Met His Gly Gly Lys Lys Met Gly Ser Lys	
173	178 183 188
gaa gag gaa aat ggg caa ggt cat ctc aaa agg aaa cga cct gtc aaa	985
Glu Glu Glu Asn Gly Gln Gly His Leu Lys Arg Lys Arg Pro Val Lys	
189	194 199 204
gac agg cta ggg aac aga cca gaa atg aac tat aaa ggt cga tac gag	1033
Asp Arg Leu Gly Asn Arg Pro Glu Met Asn Tyr Lys Gly Arg Tyr Glu	
205	210 215 220
atc aca gcg gaa gat tct caa gag aaa gtg gct gat gaa att tca ttc	1081
Ile Thr Ala Glu Asp Ser Gln Glu Lys Val Ala Asp Glu Ile Ser Phe	
221	226 231 236
agg tta cag gaa cca aag aaa gac ctg ata gcc cga gta gtg agg att	1129
Arg Leu Gln Glu Pro Lys Lys Asp Leu Ile Ala Arg Val Val Arg Ile	
237	242 247 252
att ggt aac aaa aag gca att gaa ctt ctg atg gaa acc gct gaa gtt	1177
Ile Gly Asn Lys Lys Ala Ile Glu Leu Leu Met Glu Thr Ala Glu Val	
253	258 263 268
gaa caa aat ggt ggt ctc ttt ata atg aat ggt agt cga aga aga aca	1225
Glu Gln Asn Gly Gly Leu Phe Ile Met Asn Gly Ser Arg Arg Arg Thr	
269	274 279 284
cca ggt gga gtt ttt ctg aat ctc ttg aaa aac act cct agt atc agc	1273
Pro Gly Gly Val Phe Leu Asn Leu Leu Lys Asn Thr Pro Ser Ile Ser	
285	290 295 300
gag gaa caa att aag gac att ttc tac att gaa aac caa aag gaa tat	1321
Glu Glu Gln Ile Lys Asp Ile Phe Tyr Ile Glu Asn Gln Lys Glu Tyr	
301	306 311 316
gaa aat aaa aaa gct gct agg aag agg aga aca caa gtg ttg ggg aaa	1369
Glu Asn Lys Lys Ala Ala Arg Lys Arg Arg Thr Gln Val Leu Gly Lys	
317	322 327 332
aag atg aaa caa gct att aaa agt cta aat ttt caa gaa gat gat gat	1417
Lys Met Lys Lys Gln Ala Ile Lys Ser Leu Asn Phe Gln Glu Asp Asp Asp	
333	338 343 348
aca tca cga gaa act ttt gca agt gac acg aat gag gcc ttg gcc tct	1465
Thr Ser Arg Glu Thr Phe Ala Ser Asp Thr Asn Glu Ala Leu Ala Ser	
349	354 359 364
ctt gat gag tca cag gaa gga cat gca gaa gcc aag ttg gag gca gag	1513
Leu Asp Glu Ser Gln Glu Gly His Ala Glu Ala Lys Leu Glu Ala Glu	
365	370 375 380
gaa gcc att gaa gtt gat cat tct cat gat ttg gac atc ttt taa gta	1561
Glu Ala Ile Glu Val Asp His Ser His Asp Leu Asp Ile Phe *	
381	386 391
cattttcaac agtttgagga ct	1583

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 <212> DNA  
 <213> Homo sapiens

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<220>  
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 Met  
 1  
 ggg agc gtc ctg ggg ctg tgc tcc atg gcg agc tgg ata cca tgt ttg 166  
 Gly Ser Val Leu Gly Leu Cys Ser Met Ala Ser Trp Ile Pro Cys Leu  
 2 7 12 17  
 tgt gga agt gcc ccg tgt ttg cta tgc cga tgc tgt cct agt gga aac 214  
 Cys Gly Ser Ala Pro Cys Leu Leu Cys Arg Cys Cys Pro Ser Gly Asn  
 18 23 28 33  
 aac tcc act gta act aga ttg atc tat gca ctt ttc ttg ctt gtt gga 262  
 Asn Ser Thr Val Thr Arg Leu Ile Tyr Ala Leu Phe Leu Leu Val Gly  
 34 39 44 49  
 gta tgt gta gct tgt gta atg ttg ata cca gga atg gaa gaa caa ctg 310  
 Val Cys Val Ala Cys Val Met Leu Ile Pro Gly Met Glu Glu Gln Leu  
 50 55 60 65  
 aat aag att cct gga ttt tgt gag aat gag aaa ggt gtt gtc cct tgt 358  
 Asn Lys Ile Pro Gly Phe Cys Glu Asn Glu Lys Gly Val Val Pro Cys  
 66 71 76 81  
 aac att ttg gtt ggc tat aaa gct gta tat cgt ttg tgc ttt ggt ttg 406  
 Asn Ile Leu Val Gly Tyr Lys Ala Val Tyr Arg Leu Cys Phe Gly Leu  
 82 87 92 97  
 gct atg ttc tat ctt ctt ctc tct tta cta atg atc aaa gtg aag agt 454  
 Ala Met Phe Tyr Leu Leu Leu Ser Leu Leu Met Ile Lys Val Lys Ser  
 98 103 108 113  
 agc agt gat cgt aga gct gca gtg cac aat gga ttt tgg ttc ttt aaa 502  
 Ser Ser Asp Pro Arg Ala Ala Val His Asn Gly Phe Trp Phe Phe Lys  
 114 119 124 129  
 ttt gct gca gca att gca att att att ggg gca ttc ttc att cca gaa 550



Phe Ala Ala Ala Ile Ala Ile Ile Ile Gly Ala Phe Phe Ile Pro Glu	
130 135 140 145	
gga act ttt aca act gtg tgg ttt tat gta ggc atg gca ggt gcc ttt	598
Gly Thr Phe Thr Thr Val Trp Phe Tyr Val Gly Met Ala Gly Ala Phe	
146 151 156 161	
tgt ttc atc ctc ata caa cta gtc tta ctt att gat ttt gca cat tca	646
Cys Phe Ile Leu Ile Gln Leu Val Leu Leu Ile Asp Phe Ala His Ser	
162 167 172 177	
tgg aat gaa tcg tgg gtt gaa aaa atg gaa gaa ggg aac tcg aga tgt	694
Trp Asn Glu Ser Trp Val Glu Lys Met Glu Glu Gly Asn Ser Arg Cys	
178 183 188 193	
tgg tat gca gcc ttg tta tca gct aca gct ctg aat tat ctg ctg tct	742
Trp Tyr Ala Ala Leu Leu Ser Ala Thr Ala Leu Asn Tyr Leu Leu Ser	
194 199 204 209	
tta gtt gct atc gtc ctg ttc ttt gtc tac tac act cat cca gcc agt	790
Leu Val Ala Ile Val Leu Phe Phe Val Tyr Tyr Thr His Pro Ala Ser	
210 215 220 225	
tgt tca gaa aac aag gcg ttc atc agt gtc aac atg ctc ctc tgc gtt	838
Cys Ser Glu Asn Lys Ala Phe Ile Ser Val Asn Met Leu Leu Cys Val	
226 231 236 241	
ggg gct tct gta atg tct ata ctg cca aaa atc caa gaa tca caa cca	886
Gly Ala Ser Val Met Ser Ile Leu Pro Lys Ile Gln Glu Ser Gln Pro	
242 247 252 257	
aga tct ggt ttg tta cag tct tca gta att aca gtc tac aca atg tat	934
Arg Ser Gly Leu Leu Gln Ser Ser Val Ile Thr Val Tyr Thr Met Tyr	
258 263 268 273	
ttg aca tgg tca gct atg acc aat gaa cca gaa aca aat tgc aac cca	982
Leu Thr Trp Ser Ala Met Thr Asn Glu Pro Glu Thr Asn Cys Asn Pro	
274 279 284 289	
agt cta cta agc ata att ggc tac aat aca aca agc act gtc cca aag	1030
Ser Leu Leu Ser Ile Ile Gly Tyr Asn Thr Thr Ser Thr Val Pro Lys	
290 295 300 305	
gaa ggg cag tca gtc cag tgg tgg cat gct caa gga att ata gga cta	1078
Glu Gly Gln Ser Val Gln Trp Trp His Ala Gln Gly Ile Ile Gly Leu	
306 311 316 321	
att ctc ttt ttg ttg tgt gta ttt tat tcc agc atc cgt act tca aac	1126
Ile Leu Phe Leu Leu Cys Val Phe Tyr Ser Ser Ile Arg Thr Ser Asn	
322 327 332 337	
aat agt cag gtt aat aaa ctg act cta aca agt gat gaa tct aca tta	1174
Asn Ser Gln Val Asn Lys Leu Thr Leu Thr Ser Asp Glu Ser Thr Leu	
338 343 348 353	
ata gaa gat ggt gga gct aga agt gat gga tca ctg gag gat ggg gac	1222
Ile Glu Asp Gly Gly Ala Arg Ser Asp Gly Ser Leu Glu Asp Gly Asp	

354	359	364	369	
gat gtt cac cga gct gta gat aat gaa agg gat ggt gtc act tac agt				1270
Asp Val His Arg Ala Val Asp Asn Glu Arg Asp Gly Val Thr Tyr Ser				
370	375	380	385	
tat tcc ttc ttt cac ttc atg ctt ttc ctg gct tca ctt tat atc atg				1318
Tyr Ser Phe Phe His Phe Met Leu Phe Leu Ala Ser Leu Tyr Ile Met				
386	391	396	401	
atg acc ctt acc aac tgg tac agg tat gaa ccc tct cgt gag atg aaa				1366
Met Thr Leu Thr Asn Trp Tyr Arg Tyr Glu Pro Ser Arg Glu Met Lys				
402	407	412	417	
agt cag tgg aca gct gtc tgg gtg aaa atc tct tcc agt tgg att ggc				1414
Ser Gln Trp Thr Ala Val Trp Val Lys Ile Ser Ser Ser Trp Ile Gly				
418	423	428	433	
atc gtg ctg tat gtt tgg aca ctc gtg gca cca ctt gtt ctt aca aat				1462
Ile Val Leu Tyr Val Trp Thr Leu Val Ala Pro Leu Val Leu Thr Asn				
434	439	444	449	
cgt gat ttt gac tga gtgagacttc tagcatgaaa gtcccacttt gattattgct				1517
Arg Asp Phe Asp *				
450				
tatttgaaaa cagtattccc aacttttgta aagttgtgta tgtttttgct tcccatgtaa				1577
cttctccagt gttctggcat gaattagatt ttactgcttg tcattttggt attttcttac				1637
caagtgcatt gatatgtgaa gtagaatgaa ttgcagagga aagttttatg aatatgggtga				1697
tgagtttagta aaagtggcca ctattgggct tattctctgc tctatagttg tgaaatgaag				1757
agtgaaaaca aatttgtttg actatttttaa aattatatta gaccttaagc tgttttagca				1817
agcattaaag caaatgtatg gctgcctttt gaaatatttg atgtgttgcc tggcaggata				1877
ctgcaaagaa catggtttat tttaaaattt ataaacaagt cacttaaagc ccagttgtct				1937
gaaaaatctt ataaggtttt acccttgata cggaatttac acaggtaggg agtgtttagt				1997
ggacaatagt gtaggttatg gatggaggtg tcggtactaa attgaataac gagtaaataa				2057
tcttacttgg gtagagatgg cctttgccaa caaagtgaac tgttttggtt gttttaaact				2117
catgaagtat gggttcagtg gaaatgtttg gaactctgaa ggatttagac aaggttttga				2177
aaaggataat catgggtagg aaggaagtgt ttgaaagtca ctttgaaagt tagttttggg				2237
ccagcacggt agctcaccct tgtaatocca gcactttggg aggctgaggt gggtagatta				2297
cttgagccca ggaattcaag accagcctgg gcaacatggt gaaaccctgt ttcataaaaa				2357
aataatctgg gctttgtagc atatgcctgt ggtcccagct actgaggagg ctgaggtggg				2417
aggattgctt gagcccagga ggcagaggtt gcagtgagcc aaggtcacgt cactgcactc				2477

tagcctgggc aacagagtaa gacaaaaaat atatatatat tgaaaatcaa aggaggcaaa	2537
attttgacag ggaaggaagt aactgcaaaa cactaggctt tagtaggtac ttatataaaa	2597
tctagtccag ttctcttcat ttaaaaaaat gaagacacga agtacagact taaatagctc	2657
agatangcaa ttaggaaatt tcaagttggc caataatagc attctctctg acatttaaaa	2717
ataatttcta ttcaaaa	2734

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 <212> DNA  
 <213> Homo sapiens

<220>  
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 <222> (1)..(1554)

<400> 534

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Met Ala Glu Ala Ala Pro Gly Thr Thr Val Thr Thr Ser Gly Ala	
1 5 10	
gga gca gca gcg gcg gag gcg gcg gag acg gcg gaa gca gtc tcc ccg	96
Gly Ala Ala Ala Ala Glu Ala Ala Glu Thr Ala Glu Ala Val Ser Pro	
17 22 27 32	
act ccg atc ccc aca gtc acc gcc ccg tcc ccg agg gcg ggc gga ggg	144
Thr Pro Ile Pro Thr Val Thr Ala Pro Ser Pro Arg Ala Gly Gly Gly	
33 38 43 48	
gtc ggc ggc agc gac ggc agc gac ggt agt ggc ggc agg ggc gac agt	192
Val Gly Gly Ser Asp Gly Ser Asp Gly Ser Gly Gly Arg Gly Asp Ser	
49 54 59 64	
ggc gcg tat gac ggc agc ggt gcg tgc ggc ggc agc gac gcg tgc gat	240
Gly Ala Tyr Asp Gly Ser Gly Ala Cys Gly Gly Ser Asp Ala Cys Asp	
65 70 75 80	
ggc agc ggc gac agc agc ggc gac agc tgg act aaa cag gtc act tgt	288
Gly Ser Gly Asp Ser Ser Gly Asp Ser Trp Thr Lys Gln Val Thr Cys	
81 86 91 96	
aga tat ttt aag tat ggg att tgt aag gaa gga gat aac tgt cgc tac	336
Arg Tyr Phe Lys Tyr Gly Ile Cys Lys Glu Gly Asp Asn Cys Arg Tyr	
97 102 107 112	
tcg cat gac ctc tct gac cgt ctg tgt ggt gta gtg tgc aag tat ttt	384
Ser His Asp Leu Ser Asp Arg Leu Cys Gly Val Val Cys Lys Tyr Phe	
113 118 / 123 128	
cag cga ggg tac tgt att tat gga gac cgc tgc aga tgt gaa cat agc	432

Gln	Arg	Gly	Tyr	Cys	Ile	Tyr	Gly	Asp	Arg	Cys	Arg	Cys	Glu	His	Ser		
129					134					139					144		
aag	cca	ttg	aaa	cag	gaa	gaa	gca	act	gct	aca	gag	cta	act	aca	aag	480	
Lys	Pro	Leu	Lys	Gln	Glu	Glu	Ala	Thr	Ala	Thr	Glu	Leu	Thr	Thr	Lys		
145					150					155					160		
tca	tcc	ctt	gct	gct	tcc	tca	agt	ctc	tca	tcg	ata	gtt	gga	cca	ctt	528	
Ser	Ser	Leu	Ala	Ala	Ser	Ser	Ser	Leu	Ser	Ser	Ile	Val	Gly	Pro	Leu		
161					166					171					176		
gtt	gaa	atg	aat	aca	ggc	gaa	gct	gag	tca	aga	aat	tca	aac	ttt	gca	576	
Val	Glu	Met	Asn	Thr	Gly	Glu	Ala	Glu	Ser	Arg	Asn	Ser	Asn	Phe	Ala		
177					182					187					192		
act	gta	gta	gca	ggc	tca	gag	gac	tgg	gtg	aat	gct	att	gag	ttt	gtt	624	
Thr	Val	Val	Ala	Gly	Ser	Glu	Asp	Trp	Val	Asn	Ala	Ile	Glu	Phe	Val		
193					198					203					208		
cct	ggg	caa	ccc	tac	tgt	ggc	cgt	act	gcg	cct	tcc	tgc	act	gaa	gca	672	
Pro	Gly	Gln	Pro	Tyr	Cys	Gly	Arg	Thr	Ala	Pro	Ser	Cys	Thr	Glu	Ala		
209					214					219					224		
ccc	ctg	cag	ggc	tca	gtg	acc	aag	gaa	gaa	tca	gag	aaa	gag	caa	acc	720	
Pro	Leu	Gln	Gly	Ser	Val	Thr	Lys	Glu	Glu	Ser	Glu	Lys	Glu	Gln	Thr		
225					230					235					240		
gcc	gtg	gag	aca	aag	aag	cag	ctg	tgc	ccc	tat	gct	gca	gtg	gga	gag	768	
Ala	Val	Glu	Thr	Lys	Lys	Gln	Leu	Cys	Pro	Tyr	Ala	Ala	Val	Gly	Glu		
241					246					251					256		
tgc	cga	tac	ggg	gag	aac	tgt	gtg	tat	ctc	cac	gga	gat	tct	tgt	gac	816	
Cys	Arg	Tyr	Gly	Glu	Asn	Cys	Val	Tyr	Leu	His	Gly	Asp	Ser	Cys	Asp		
257					262					267					272		
atg	tgt	ggg	ctg	cag	gtc	ctg	cat	cca	atg	gat	gct	gcc	cag	aga	tcg	864	
Met	Cys	Gly	Leu	Gln	Val	Leu	His	Pro	Met	Asp	Ala	Ala	Gln	Arg	Ser		
273					278					283					288		
cag	cat	atc	aaa	tcg	tgc	att	gag	gcc	cat	gag	aag	gac	atg	gag	ctc	912	
Gln	His	Ile	Lys	Ser	Cys	Ile	Glu	Ala	His	Glu	Lys	Asp	Met	Glu	Leu		
289					294					299					304		
tca	ttt	gcc	gtg	cag	cgc	agc	aag	gac	atg	gtg	tgt	ggg	atc	tgc	atg	960	
Ser	Phe	Ala	Val	Gln	Arg	Ser	Lys	Asp	Met	Val	Cys	Gly	Ile	Cys	Met		
305					310					315					320		
gag	gtg	gtc	tat	gag	aaa	gcc	aac	ccc	agt	gag	cgc	cgc	ttc	ggg	atc	1008	
Glu	Val	Val	Tyr	Glu	Lys	Ala	Asn	Pro	Ser	Glu	Arg	Arg	Phe	Gly	Ile		
321					326					331					336		
ctc	tcc	aac	tgc	aac	cac	acc	tac	tgt	ctc	aag	tgc	att	cgc	aag	tgg	1056	
Leu	Ser	Asn	Cys	Asn	His	Thr	Tyr	Cys	Leu	Lys	Cys	Ile	Arg	Lys	Trp		
337					342					347					352		
agg	agt	gct	aag	caa	ttt	gag	agc	aag	atc	ata	aag	tcc	tgc	cca	gaa	1104	
Arg	Ser	Ala	Lys	Gln	Phe	Glu	Ser	Lys	Ile	Ile	Lys	Ser	Cys	Pro	Glu		

353	358	363	368	
tgc cgg atc aca tct	aac ttt gtc att cca	agt gag tac tgg gtg gag		1152
Cys Arg Ile Thr Ser	Asn Phe Val Ile Pro	Ser Glu Tyr Trp Val Glu		
369	374	379	384	
gag aaa gaa gag aag	cag aaa ctc att ctg	aaa tac aag gag gca atg		1200
Glu Lys Glu Glu Lys	Gln Lys Leu Ile Leu	Lys Tyr Lys Glu Ala Met		
385	390	395	400	
agc aac aag gcg tgc	agg tat ttt gat gaa	gga cgt ggg agc tgc cca		1248
Ser Asn Lys Ala Cys	Arg Tyr Phe Asp Glu	Gly Arg Gly Ser Cys Pro		
401	406	411	416	
ttt gga ggg aac tgt	ttt tac aag cat gcg	tac cct gat ggc cgt aga		1296
Phe Gly Gly Asn Cys	Phe Tyr Lys His Ala	Tyr Pro Asp Gly Arg Arg		
417	422	427	432	
gag gag cca cag aga	cag aaa gtg gga aca	tca agc aga tac cgg gcc		1344
Glu Glu Pro Gln Arg	Gln Lys Val Gly Thr	Ser Ser Arg Tyr Arg Ala		
433	438	443	448	
caa cga agg aac cac	ttc tgg gaa ctc att	gag gaa aga gag aac agc		1392
Gln Arg Arg Asn His	Phe Trp Glu Leu Ile	Glu Glu Arg Glu Asn Ser		
449	454	459	464	
aac ccc ttt gac aac	gat gaa gaa gag gtt	gtc acc ttt gag ctg ggc		1440
Asn Pro Phe Asp Asn	Asp Glu Glu Glu Val	Val Thr Phe Glu Leu Gly		
465	470	475	480	
gag atg ttg ctt atg	ctt ttg gct gca ggt	ggg gac gac gaa cta aca		1488
Glu Met Leu Leu Met	Leu Leu Ala Ala Gly	Gly Asp Asp Glu Leu Thr		
481	486	491	496	
gac tct gaa gat gag	tgg gac ttg ttt cat	gat gag ctg gaa gat ttt		1536
Asp Ser Glu Asp Glu	Trp Asp Leu Phe His	Asp Glu Leu Glu Asp Phe		
497	502	507	512	
tat gac ttg gat cta	tag caacct tgcgtggcgt	gtgaactgggt ctgctgacct		1590
Tyr Asp Leu Asp Leu	*			
513	518			
cagacagcag ctgtccctg	tgggtggtgtg gcagtgcctg	tgttctctcc taggcaggcc		1650
tctcaactcc aggtgctgtc	ctaagaattt ttaccaggg	cctgtcttct caaccctca		1710
cctttccctg aggagtgtgt	tgttttccct gttgaaaaa	gttacaaaaa taaatcttaa		1770
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tctgtttttca accagattgc	atztatggac ttttcacaca	ctcattttga ggaccccagg		1890
ttcaaaagta aaagcagtgg	ccctgctttg ggggtccaaga	ataggagtga tgggtgaagg		1950
gacctaagct ggccaatagc	cctctgcccc agacatggga	tgtggatcct tgaggtttct		2010
ggtgaaatct gcacatctgt	gtttttatat ctgttccta	ccctgtaatc cctaccacgt		2070

gcacttggtc tgtgggtttg gtctcttggt taattgcaca caagtaatac tactgggtaa 2130  
ccagaatcag gtgtgaatgt gttgagattt tttactgttt tgcacgatag gaaaattgag 2190  
aaagaatacg tataaaagat agagagggcat aacatcaatg cagagttgga agttggctcc 2250  
caagggctga catgggtgtga gtgtgtgggt gtgtgataag cttctcatcc ctgcatagat 2310  
gcagtattct tagccttagt agaaaaacct ggttttagtgg tttaagcctt gtgtggcaga 2370  
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taataacaca aactgggtct tggatacaca gttgtattta atgttttacg atctagcctt 2550  
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gaagttccgg ggcctttgct gtgtgggata aacagta atg gcg gag gct gca act 175  
Met Ala Glu Ala Ala Thr  
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ccc gga aca aca gcc aca aca tca gga gca gga gcg gca gcg gcg acg 223  
Pro Gly Thr Thr Ala Thr Thr Ser Gly Ala Gly Ala Ala Ala Ala Thr  
7 12 17 22

gcg gca gca gcc tcc ccc acc ccg atc ccc aca gtc acc gcc ccg tcc	271
Ala Ala Ala Ala Ser Pro Thr Pro Ile Pro Thr Val Thr Ala Pro Ser	
23 28 33 38	
ctg ggg gcg ggc gga ggg ggc ggc ggc agc gac ggc agc ggc ggc ggc	319
Leu Gly Ala Gly Gly Gly Gly Gly Gly Ser Asp Gly Ser Gly Gly Gly	
39 44 49 54	
tgg act aaa cag gtc acc tgc agg tat ttt atg cat ggg gtt tgt aag	367
Trp Thr Lys Gln Val Thr Cys Arg Tyr Phe Met His Gly Val Cys Lys	
55 60 65 70	
gaa gga gac aac tgt cgc tac tcg cat gac ctc tct gac agt ccg tat	415
Glu Gly Asp Asn Cys Arg Tyr Ser His Asp Leu Ser Asp Ser Pro Tyr	
71 76 81 86	
agt gta gtg tgc aag tat ttt cag cga ggg tac tgt att tat gga gac	463
Ser Val Val Cys Lys Tyr Phe Gln Arg Gly Tyr Cys Ile Tyr Gly Asp	
87 92 97 102	
cgc tgc aga tat gaa cat agc aaa cca ttg aaa cag gaa gaa gca act	511
Arg Cys Arg Tyr Glu His Ser Lys Pro Leu Lys Gln Glu Glu Ala Thr	
103 108 113 118	
gct aca gag cta act aca aag tca tcc ctt gct gct tcc tca agt ctc	559
Ala Thr Glu Leu Thr Thr Lys Ser Ser Leu Ala Ala Ser Ser Ser Leu	
119 124 129 134	
tca tcg ata gtt gga cca ctt gtt gaa atg aat aca ggc gaa gct gag	607
Ser Ser Ile Val Gly Pro Leu Val Glu Met Asn Thr Gly Glu Ala Glu	
135 140 145 150	
tca aga aat tca aac ttt gca act gta gga gca ggt tca gag gac tgg	655
Ser Arg Asn Ser Asn Phe Ala Thr Val Gly Ala Gly Ser Glu Asp Trp	
151 156 161 166	
gtg aat gct att gag ttt gtt cct ggg caa ccc tac tgt ggc cgt act	703
Val Asn Ala Ile Glu Phe Val Pro Gly Gln Pro Tyr Cys Gly Arg Thr	
167 172 177 182	
gcg cct tcc tgc act gaa gca ccc ctg cag ggc tca gtg acc aag gaa	751
Ala Pro Ser Cys Thr Glu Ala Pro Leu Gln Gly Ser Val Thr Lys Glu	
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gaa tca gag aaa gag caa acc gcc gtg gag aca aag aag cag ctg tgc	799
Glu Ser Glu Lys Glu Gln Thr Ala Val Glu Thr Lys Lys Gln Leu Cys	
199 204 209 214	
ccc tat gct gca gtg gga gag tgc cga tac ggg gag aac tgt gtg tat	847
Pro Tyr Ala Ala Val Gly Glu Cys Arg Tyr Gly Glu Asn Cys Val Tyr	
215 220 225 230	
ctc cac gga gat tct tgt gac atg tgt ggg ctg cag ctc ctg cat cca	895
Leu His Gly Asp Ser Cys Asp Met Cys Gly Leu Gln Leu Leu His Pro	
231 236 241 246	

atg gat gct gcc cag aga tcg cag cat atc aaa tcg tgc att gag gcc	943
Met Asp Ala Ala Gln Arg Ser Gln His Ile Lys Ser Cys Ile Glu Ala	
247 252 257 262	
cat gag aag gac atg gag ctc tca ttt gcc gtg cag cgc agc aag gac	991
His Glu Lys Asp Met Glu Leu Ser Phe Ala Val Gln Arg Ser Lys Asp	
263 268 273 278	
atg gtg tgt ggg atc tgc atg gag gtg gtc tat gag aaa gcc aac ccc	1039
Met Val Cys Gly Ile Cys Met Glu Val Val Tyr Glu Lys Ala Asn Pro	
279 284 289 294	
agt gag cgc cgc ttc ggg atc ctc tcc aac tgc aac cac acc tac tgt	1087
Ser Glu Arg Arg Phe Gly Ile Leu Ser Asn Cys Asn His Thr Tyr Cys	
295 300 305 310	
ctc aag tgc att tgc acg tgg agg agt gct aag caa ttt gag agc aag	1135
Leu Lys Cys Ile Cys Thr Trp Arg Ser Ala Lys Gln Phe Glu Ser Lys	
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atc ata aag tcc tgc cca gaa tgc cag atc aca tct aac tta gtc att	1183
Ile Ile Lys Ser Cys Pro Glu Cys Gln Ile Thr Ser Asn Leu Val Ile	
327 332 337 342	
cca agt gag tac tgg gtt gag gag aaa gaa gag aag cag aaa ctc gtt	1231
Pro Ser Glu Tyr Trp Val Glu Glu Lys Glu Glu Lys Gln Lys Leu Val	
343 348 353 358	
cag aaa tac aaa gag tca atg agc atc aag gcg tgc acg tat ttt gat	1279
Gln Lys Tyr Lys Glu Ser Met Ser Ile Lys Ala Cys Thr Tyr Phe Asp	
359 364 369 374	
gaa gga cat ggg agc tgc cca ttt gga ggg aac tgc ttt tac aag cat	1327
Glu Gly His Gly Ser Cys Pro Phe Gly Gly Asn Cys Phe Tyr Lys His	
375 380 385 390	
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Ser Pro Asn Lys Cys Ser Gly Met Arg Phe Pro Leu Gln Glu Glu Asn	
2 7 12 17	
tca gtt aca cat cac gaa gtc aaa tgc cag ggg aaa cca tta gcc gga	153
Ser Val Thr His His Glu Val Lys Cys Gln Gly Lys Pro Leu Ala Gly	
18 23 28 33	
atc tac agg aaa cga gaa gag aaa aga aat gct ggg aac gca gta cgg	201
Ile Tyr Arg Lys Arg Glu Glu Lys Arg Asn Ala Gly Asn Ala Val Arg	
34 39 44 49	
agc gcc atg aag tcc gag gaa cag aag atc aaa gac gcc agg aaa ggt	249
Ser Ala Met Lys Ser Glu Glu Gln Lys Ile Lys Asp Ala Arg Lys Gly	
50 55 60 65	
ccc ctg gta cct ttt cca aac caa aaa tct gaa gca gca gaa cct cca	297
Pro Leu Val Pro Phe Pro Asn Gln Lys Ser Glu Ala Ala Glu Pro Pro	
66 71 76 81	
aaa act cca ccc tca tct tgt gat tcc acc aat gca gcc atc gcc aag	345
Lys Thr Pro Pro Ser Ser Cys Asp Ser Thr Asn Ala Ala Ile Ala Lys	
82 87 92 97	
caa gcc ctg aaa aag ccc atc aag ggc aaa cag gcc ccc cga aaa aaa	393
Gln Ala Leu Lys Lys Pro Ile Lys Gly Lys Gln Ala Pro Arg Lys Lys	
98 103 108 113	
gct caa gga aaa acg caa cag aat cgc aaa ctt acg gat ttc tac cct	441
Ala Gln Gly Lys Thr Gln Gln Asn Arg Lys Leu Thr Asp Phe Tyr Pro	
114 119 124 129	
gtc cga agg agc tcc agg aag agc aaa gcc gag ctg cag tct gaa gaa	489
Val Arg Arg Ser Ser Arg Lys Ser Lys Ala Glu Leu Gln Ser Glu Glu	
130 135 140 145	
agg aaa aga ata gat gaa ttg att gaa agt ggg aag gaa gaa gga atg	537
Arg Lys Arg Ile Asp Glu Leu Ile Glu Ser Gly Lys Glu Glu Gly Met	
146 151 156 161	
aag att gac ctc atc gat ggc aaa ggc agg ggt gtg att gcc acc aag	585
Lys Ile Asp Leu Ile Asp Gly Lys Gly Arg Gly Val Ile Ala Thr Lys	
162 167 172 177	
cag ttc tcc cgg ggt gac ttt gtg gtg gaa tac cac ggg gac ctc atc	633
Gln Phe Ser Arg Gly Asp Phe Val Val Glu Tyr His Gly Asp Leu Ile	
178 183 188 193	
gag atc acc gac gcc aag aaa cgg gag gct ctg tac gca cag gac cct	681
Glu Ile Thr Asp Ala Lys Lys Arg Glu Ala Leu Tyr Ala Gln Asp Pro	
194 199 204 209	
tcc acg ggc tgc tac atg tac tat ttt cag tat ctg agc aaa acc tac	729
Ser Thr Gly Cys Tyr Met Tyr Tyr Phe Gln Tyr Leu Ser Lys Thr Tyr	
210 215 220 225	

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Cys Val Asp Ala Thr Arg Glu Thr Asn Arg Leu Gly Arg Leu Ile Asn	
226 231 236 241	
cac agc aaa tgt ggg aac tgc caa acc aaa ctg cac gac atc gac ggc	825
His Ser Lys Cys Gly Asn Cys Gln Thr Lys Leu His Asp Ile Asp Gly	
242 247 252 257	
gta cct cac ctc atc ctc atc gcc tcc cga gac atc gcg gct ggg gag	873
Val Pro His Leu Ile Leu Ile Ala Ser Arg Asp Ile Ala Ala Gly Glu	
258 263 268 273	
gag ctc ctg tat gac tat ggg gac cgc agc aag gct tcc att gaa gcc	921
Glu Leu Leu Tyr Asp Tyr Gly Asp Arg Ser Lys Ala Ser Ile Glu Ala	
274 279 284 289	
cac ccg tgg ctg aag cat taa cc ggtgggcccc gtgccctccc cgccccactt	974
His Pro Trp Leu Lys His *	
290 295	
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                Met Ser Lys Leu Arg Met Val Leu Leu
                  1                5

gaa gac tct gga tct gct gac ttc aga aga cat ttt gtc aac ttg agt      161
Glu Asp Ser Gly Ser Ala Asp Phe Arg Arg His Phe Val Asn Leu Ser
  10                15                20                25

ccc ttc acc att act gtg gtc tta ctt ctc agt gcc tgt ttt gtc acc      209
Pro Phe Thr Ile Thr Val Val Leu Leu Leu Ser Ala Cys Phe Val Thr
  26                31                36                41

agt tct ctt gga gga aca gac aag gag ctg agg cta gtg gat ggt gaa      257
Ser Ser Leu Gly Gly Thr Asp Lys Glu Leu Arg Leu Val Asp Gly Glu
  42                47                52                57

aac aag tgt agc ggg aga gtg gaa gtg aaa gtc cag gag gag tgg gga      305
Asn Lys Cys Ser Gly Arg Val Glu Val Lys Val Gln Glu Glu Trp Gly
  58                63                68                73

acg gtg tgt aat aat ggc tgg agc atg gaa gcg gtc tct gtg att tgt      353
Thr Val Cys Asn Asn Gly Trp Ser Met Glu Ala Val Ser Val Ile Cys
  74                79                84                89

aac cag ctg gga tgt cca act gct atc aaa gcc cct gga tgg gct aat      401
Asn Gln Leu Gly Cys Pro Thr Ala Ile Lys Ala Pro Gly Trp Ala Asn
  90                95                100                105

tcc agt gca ggt tct gga cgc att tgg atg gat cat gtt tct tgt cgt      449
Ser Ser Ala Gly Ser Gly Arg Ile Trp Met Asp His Val Ser Cys Arg
  106                111                116                121

ggg aat gag tca gct ctt tgg gat tgc aaa cat gat gga tgg gga aag      497
Gly Asn Glu Ser Ala Leu Trp Asp Cys Lys His Asp Gly Trp Gly Lys
  122                127                132                137

cat agt aac tgt act cac caa caa gat gct gga gtg acc tgc tca gat      545
His Ser Asn Cys Thr His Gln Gln Asp Ala Gly Val Thr Cys Ser Asp
  138                143                148                153

gga tcc aat ttg gaa atg agg ctg acg cgt gga ggg aat atg tgt tct      593
Gly Ser Asn Leu Glu Met Arg Leu Thr Arg Gly Gly Asn Met Cys Ser
  154                159                164                169

gga aga ata gag atc aaa ttc caa gga cgg tgg gga aca gtg tgt gat      641
Gly Arg Ile Glu Ile Lys Phe Gln Gly Arg Trp Gly Thr Val Cys Asp
  170                175                180                185

gat aac ttc aac ata gat cat gca tct gtc att tgt aga caa ctt gaa      689
Asp Asn Phe Asn Ile Asp His Ala Ser Val Ile Cys Arg Gln Leu Glu
  
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Cys Gly Ser Ala Val Ser Phe Ser Gly Ser Ser Asn Phe Gly Glu Gly				
202	207	212	217	
tct gga cca atc tgg ttt gat gat ctt ata tgc aac gga aat gag tca				785
Ser Gly Pro Ile Trp Phe Asp Asp Leu Ile Cys Asn Gly Asn Glu Ser				
218	223	228	233	
gct ctc tgg aac tgc aaa cat caa gga tgg gga aag cat aac tgt gat				833
Ala Leu Trp Asn Cys Lys His Gln Gly Trp Gly Lys His Asn Cys Asp				
234	239	244	249	
cat gct gag gat gct gga gtg att tgc tca aag gga gca gat ctg agc				881
His Ala Glu Asp Ala Gly Val Ile Cys Ser Lys Gly Ala Asp Leu Ser				
250	255	260	265	
ctg aga ctg gta gat gga gtc act gaa tgt tca gga aga tta gaa gtg				929
Leu Arg Leu Val Asp Gly Val Thr Glu Cys Ser Gly Arg Leu Glu Val				
266	271	276	281	
aga ttc caa gga gaa tgg ggg aca ata tgt gat gac ggc tgg gac agt				977
Arg Phe Gln Gly Glu Trp Gly Thr Ile Cys Asp Asp Gly Trp Asp Ser				
282	287	292	297	
tac gat gct gct gtg gca tgc aag caa ctg gga tgt cca act gcc gtc				1025
Tyr Asp Ala Ala Val Ala Cys Lys Gln Leu Gly Cys Pro Thr Ala Val				
298	303	308	313	
aca gcc att ggt cga gtt aac gcc agt aag gga ttt gga cac atc tgg				1073
Thr Ala Ile Gly Arg Val Asn Ala Ser Lys Gly Phe Gly His Ile Trp				
314	319	324	329	
ctt gac agc gtt tct tgc cag gga cat gaa cct gct gtc tgg caa tgt				1121
Leu Asp Ser Val Ser Cys Gln Gly His Glu Pro Ala Val Trp Gln Cys				
330	335	340	345	
aaa cac cat gaa tgg gga aag cat tat tgc aat cac aat gaa gat gct				1169
Lys His His Glu Trp Gly Lys His Tyr Cys Asn His Asn Glu Asp Ala				
346	351	356	361	
ggc gtg aca tgt tct gat gga tca gat ctg gag cta aga ctt aga ggt				1217
Gly Val Thr Cys Ser Asp Gly Ser Asp Leu Glu Leu Arg Leu Arg Gly				
362	367	372	377	
gga ggc agc cgc tgt gct ggg aca gtt gag gtg gag att cag aga ctg				1265
Gly Gly Ser Arg Cys Ala Gly Thr Val Glu Val Glu Ile Gln Arg Leu				
378	383	388	393	
tta ggg aag gtg tgt gac aga ggc tgg gga ctg aaa gaa gct gat gtg				1313
Leu Gly Lys Val Cys Asp Arg Gly Trp Gly Leu Lys Glu Ala Asp Val				
394	399	404	409	
gtt tgc agg cag ctg gga tgt gga tct gca ctc aaa aca tct tat caa				1361
Val Cys Arg Gln Leu Gly Cys Gly Ser Ala Leu Lys Thr Ser Tyr Gln				
410	415	420	425	

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Val Tyr Ser Lys Ile Gln Ala Thr Asn Thr Trp Leu Phe Leu Ser Ser	
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Cys Asn Gly Asn Glu Thr Ser Leu Trp Asp Cys Lys Asn Trp Gln Trp	
442 447 452 457	
ggg gga ctt acc tgt gat cac tat gaa gaa gcc aaa att acc tgc tca	1505
Gly Gly Leu Thr Cys Asp His Tyr Glu Glu Ala Lys Ile Thr Cys Ser	
458 463 468 473	
gcc cac agg gaa ccc aga ctg gtt gga ggg gac att ccc tgt tct gga	1553
Ala His Arg Glu Pro Arg Leu Val Gly Gly Asp Ile Pro Cys Ser Gly	
474 479 484 489	
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Arg Val Glu Val Lys His Gly Asp Thr Trp Gly Ser Ile Cys Asp Ser	
490 495 500 505	
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Asp Phe Ser Leu Glu Ala Ala Ser Val Leu Cys Arg Glu Leu Gln Cys	
506 511 516 521	
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Gly Thr Val Val Ser Ile Leu Gly Gly Ala His Phe Gly Glu Gly Asn	
522 527 532 537	
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Gly Gln Ile Trp Ala Glu Glu Phe Gln Cys Glu Gly His Glu Ser His	
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Leu Ser Leu Cys Pro Val Ala Pro Arg Pro Glu Gly Thr Cys Ser His	
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Ser Arg Asp Val Gly Val Val Cys Ser Arg Tyr Thr Glu Ile Arg Leu	
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Val Asn Gly Lys Thr Pro Cys Glu Gly Arg Val Glu Leu Lys Thr Leu	
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Gly Ala Trp Gly Ser Leu Cys Asn Ser His Trp Asp Ile Glu Asp Ala	
602 607 612 617	
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His Val Leu Cys Gln Gln Leu Lys Cys Gly Val Ala Leu Ser Thr Pro	
618 623 628 633	
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634 639 644 649	

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Phe His Cys Thr Gly Thr Glu Gln His Met Gly Asp Cys Pro Val Thr	
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Ala Leu Gly Ala Ser Leu Cys Pro Ser Glu Gln Val Ala Ser Val Ile	
666 671 676 681	
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Cys Ser Gly Asn Gln Ser Gln Thr Leu Ser Ser Cys Asn Ser Ser Ser	
682 687 692 697	
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698 703 708 713	
ata gag agt ggt caa ctt cgc ctg gta aat gga gga ggt cgc tgt gct	2273
Ile Glu Ser Gly Gln Leu Arg Leu Val Asn Gly Gly Gly Arg Cys Ala	
714 719 724 729	
ggg aga gta gag atc tat cat gag ggc tcc tgg ggc acc atc tgt gat	2321
Gly Arg Val Glu Ile Tyr His Glu Gly Ser Trp Gly Thr Ile Cys Asp	
730 735 740 745	
gac agc tgg gac ctg agt gat gcc cac gtg gtt tgc aga cag ctg ggc	2369
Asp Ser Trp Asp Leu Ser Asp Ala His Val Val Cys Arg Gln Leu Gly	
746 751 756 761	
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Cys Gly Glu Ala Ile Asn Ala Thr Gly Ser Ala His Phe Gly Glu Gly	
762 767 772 777	
aca ggg ccc atc tgg ctg gat gag atg aaa tgc aat gga aaa gaa tcc	2465
Thr Gly Pro Ile Trp Leu Asp Glu Met Lys Cys Asn Gly Lys Glu Ser	
778 783 788 793	
cgc att tgg cag tgc cat tca cac ggc tgg ggg cag caa aat tgc agg	2513
Arg Ile Trp Gln Cys His Ser His Gly Trp Gly Gln Gln Asn Cys Arg	
794 799 804 809	
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His Lys Glu Asp Ala Gly Val Ile Cys Ser Glu Phe Met Ser Leu Arg	
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ctg acc agt gaa gcc agc aga gag gcc tgt gca ggg cgt ctg gaa gtt	2609
Leu Thr Ser Glu Ala Ser Arg Glu Ala Cys Ala Gly Arg Leu Glu Val	
826 831 836 841	
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Phe Tyr Asn Gly Ala Trp Gly Thr Val Gly Lys Ser Ser Met Ser Glu	
842 847 852 857	
acc act gtg ggt gtg gtg tgc agg cag ctg ggc tgt gca gac aaa ggg	2705
Thr Thr Val Gly Val Val Cys Arg Gln Leu Gly Cys Ala Asp Lys Gly	
858 863 868 873	
aaa atc aac cct gca tct tta gac aag gcc atg tcc att ccc atg tgg	2753

Lys Ile Asn Pro Ala Ser Leu Asp Lys Ala Met Ser Ile Pro Met Trp	
874 879 884 889	
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Val Asp Asn Val Gln Cys Pro Lys Gly Pro Asp Thr Leu Trp Gln Cys	
890 895 900 905	
cca tca tct cca tgg gag aag aga ctg gcc agc ccc tcg gag gag acc	2849
Pro Ser Ser Pro Trp Glu Lys Arg Leu Ala Ser Pro Ser Glu Glu Thr	
906 911 916 921	
tgg atc aca tgt gac aac aag ata aga ctt cag gaa gga ccc act tcc	2897
Trp Ile Thr Cys Asp Asn Lys Ile Arg Leu Gln Glu Gly Pro Thr Ser	
922 927 932 937	
tgt tct gga cgt gtg gag atc tgg cat gga ggt tcc tgg ggg aca gtg	2945
Cys Ser Gly Arg Val Glu Ile Trp His Gly Gly Ser Trp Gly Thr Val	
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Cys Asp Asp Ser Trp Asp Leu Asp Asp Ala Gln Val Val Cys Gln Gln	
954 959 964 969	
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Leu Gly Cys Gly Pro Ala Leu Lys Ala Phe Lys Glu Ala Glu Phe Gly	
970 975 980 985	
cag ggg act gga ccg ata tgg ctc aat gaa gtg aag tgc aaa ggg aat	3089
Gln Gly Thr Gly Pro Ile Trp Leu Asn Glu Val Lys Cys Lys Gly Asn	
986 991 996 1001	
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Glu Ser Ser Leu Trp Asp Cys Pro Ala Arg Arg Trp Gly His Ser Glu	
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Cys Gly His Lys Glu Asp Ala Ala Val Asn Cys Thr Asp Ile Ser Val	
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Gln Lys Thr Pro Gln Lys Ala Thr Thr Gly Arg Ser Ser Arg Gln Ser	
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Met Ser Lys Leu Arg Met Val Leu Leu  
1 5

gaa gac tct gga tct gct gac ttc aga aga cat ttt gtc aac ctg agt 161  
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Pro Phe Thr Ile Thr Val Val Leu Leu Leu Ser Ala Cys Phe Val Thr  
26 31 36 41

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Ser Ser Leu Gly Gly Thr Asp Lys Glu Leu Arg Leu Val Asp Gly Glu  
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Asn Lys Cys Ser Gly Arg Val Glu Val Lys Val Gln Glu Glu Trp Gly  
58 63 68 73

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Thr Val Cys Asn Asn Gly Trp Ser Met Glu Ala Val Ser Val Ile Cys  
74 79 84 89

aac cag ctg gga tgt cca act gct atc aaa gcc cct gga tgg gct aat 401  
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Gly Asn Glu Ser Ala Leu Trp Asp Cys Lys His Asp Gly Trp Gly Lys	
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His Ser Asn Cys Thr His Gln Gln Asp Ala Gly Val Thr Cys Ser Asp	
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Lys His His Glu Trp Gly Lys His Tyr Cys Asn His Asn Glu Asp Ala	
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Val Cys Arg Gln Leu Gly Cys Gly Ser Ala Leu Lys Thr Ser Tyr Gln	
410 415 420 425	
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Val Tyr Ser Lys Ile Gln Ala Thr Asn Thr Trp Leu Phe Leu Ser Ser	
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Leu Ser Leu Cys Pro Val Ala Pro Arg Pro Glu Gly Thr Cys Ser His	

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Leu Ile Gly Ser Tyr Thr Val Lys Gly Thr Gly Leu Gly Ser His Ser				
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Cys Leu Phe Leu Lys Pro Cys Leu Leu Pro Gly Tyr Thr Glu Ile Arg				
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Cys Ile Glu Ser Gly Gln Leu Arg Leu Val Asn Gly Gly Gly Arg Cys				
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Ala Gly Arg Val Glu Ile Tyr His Glu Gly Ser Trp Gly Thr Ile Cys				
762	767	772	777	
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Cys Pro Ser Ser Pro Trp Glu Lys Arg Leu Ala Ser Pro Ser Glu Glu	
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Glu Cys Gly His Lys Glu Asp Ala Ala Val Asn Cys Thr Asp Ile Ser
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Ser Ser Phe Ile Ala Val Gly Ile Leu Gly Val Val Leu Leu Ala Ile
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1114                1119                1124                1129

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aaattcacct ctctcactga ctattacagt tgcattttta tggagttctt cttctcctag      3692

gattcctaag actgctgctg aatttataaa aattaagttt gtgaatgtga ctacttagtg      3752

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                               Met Glu Glu Glu Ala Ser
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Ser Pro Gly Leu Gly Cys Ser Lys Pro His Leu Glu Lys Leu Thr Leu
   7                12                17                22

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Gly Ile Thr Arg Ile Leu Glu Ser Ser Pro Gly Val Thr Glu Val Thr
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atc ata gaa aag cct cct gct gaa cgt cat atg att tct tcc tgg gaa      379
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Gln Lys Asn Asn Cys Val Met Pro Glu Asp Val Lys Asn Phe Tyr Leu
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Met Thr Asn Gly Phe His Met Thr Trp Ser Val Lys Leu Asp Ala Ser
  71                76                81                86

gat gat cag cca gag aag cct cac ttt gac tct cgc agt gtg ata ttt      523
Asp Asp Gln Pro Glu Lys Pro His Phe Asp Ser Arg Ser Val Ile Phe
  87                92                97                102

gag ctg gat tca tgc aat ggc agt ggg aaa gtt tgc ctt gtc tac aaa      571
Glu Leu Asp Ser Cys Asn Gly Ser Gly Lys Val Cys Leu Val Tyr Lys
 103                108                113                118

agt ggg aaa cca gca tta gca gaa gac act gag atc tgg ttc ctg gac      619
Ser Gly Lys Pro Ala Leu Ala Glu Asp Thr Glu Ile Trp Phe Leu Asp
 119                124                129                134

aga gcg tta tac tgg cat ttt ctc aca gac acc ttt act gcc tat tac      667
Arg Ala Leu Tyr Trp His Phe Leu Thr Asp Thr Phe Thr Ala Tyr Tyr
 135                140                145 /                150

cgc ctg ctc atc acc cac ctg ggc ctg ccc cag tgg caa tat gcc ttc      715
Arg Leu Leu Ile Thr His Leu Gly Leu Pro Gln Trp Gln Tyr Ala Phe

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151	156	161	166	
acc agc tat ggc att agc cca cag gcc aag caa tgg ttc agc atg tat				763
Thr Ser Tyr Gly Ile Ser Pro Gln Ala Lys Gln Trp Phe Ser Met Tyr				
167	172	177	182	
aaa cct atc acc tac aac aca aac ctg ctc aca gaa gag acc gac tcc				811
Lys Pro Ile Thr Tyr Asn Thr Asn Leu Leu Thr Glu Glu Thr Asp Ser				
183	188	193	198	
ttt gtg aat aag cta gat ccc agc aaa gtg ttt aag agc aag aac aag				859
Phe Val Asn Lys Leu Asp Pro Ser Lys Val Phe Lys Ser Lys Asn Lys				
199	204	209	214	
atc gta atc cca aaa aag aaa ggg cct gtg cag cct gca ggt ggc cag				907
Ile Val Ile Pro Lys Lys Lys Gly Pro Val Gln Pro Ala Gly Gly Gln				
215	220	225	230	
aaa ggg ccc tca gga ccc tcc ggt ccc tcc act tcc tcc act tct aaa				955
Lys Gly Pro Ser Gly Pro Ser Gly Pro Ser Thr Ser Ser Thr Ser Lys				
231	236	241	246	
tcc tcc tct ggc tct gga aac ccc acc cgg aag tga gcac cctccctcc				1005
Ser Ser Ser Gly Ser Gly Asn Pro Thr Arg Lys *				
247	252	257		
aactccctac cagctccaga gtgggtggttt ccatgcacag atggccctag gggtgacctc				1065
cagttttgcg tgtggaccgt aggctcttt ctagttgaat gacccaaatt gtaaggcttt				1125
tagtcccacc gacattagcc aggctcgtag tgaggcctcc agagcagggt gtgctgtccc				1185
ctgcctctgg aagcaatggg gaatttgga tcttgtgtaa gtgccaaat aagtctgagt				1245
gctttctct tcttcaacac tcaaccctca atcccttagc actgattgat tagagaggtc				1305
ccccaaagaa accactgggt ttgacctatg aagcattaga actgcattgt tcattcagga				1365
gccactagtc acatatgact atttaaattt aaagtaaatt gtatgaaaaa ttcatttctt				1425
caattgcatt agccacattt tgagtattca tgtggctggg agattctgta ttagcacaaa				1485
gatatggaac atttccatca ccacagaaag ttctgttgga cagcactgca ttagaatatt				1545
ttcatactgc tcttctcaa ttaatttttg ttgttaatgt tgatgtcttc attggatggg				1605
tcataatggt ccatgaaacc tctcaagtac acaattgtat gttctttgta tcccttacca				1665
caaatatctc gctctgctca tttcttttgc agcttctat aaagtttgtc ttcctcatca				1725
aaaaaaaaa a				1736

<210> 541

<211> 563

<212> DNA  
<213> Homo sapiens

<220>  
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<222> (185)..(460)

<400> 541

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ctggcaaagc cgagccgcag cattttatatt cgttcgtggt ttccgcacag gctggagttt      120
cgtgggttgg gtcgtacttg ggacctcggc gaagaggacc cgtttatttt tttttctttc      180
caaa atg gca gcc tcc agt cgc gca caa gtg tta tct ctg tac cgg gcg      229
Met Ala Ala Ser Ser Arg Ala Gln Val Leu Ser Leu Tyr Arg Ala
   1             5             10
atg ctg aga gag agc aag cgt ttc agc gcc tac aat tac aga aca tat      277
Met Leu Arg Glu Ser Lys Arg Phe Ser Ala Tyr Asn Tyr Arg Thr Tyr
  16             21             26             31
gct gtc agg agg ata aga gat gcc ttc aga gaa aat aaa aat gta aag      325
Ala Val Arg Arg Ile Arg Asp Ala Phe Arg Glu Asn Lys Asn Val Lys
  32             37             42             47
gat cct gta gaa att caa acc cta gtg aat aaa gcc aag aga gac ctt      373
Asp Pro Val Glu Ile Gln Thr Leu Val Asn Lys Ala Lys Arg Asp Leu
  48             53             58             63
gga gta att cgt cga cag gtc cac att ggc caa ctg tat tca act gac      421
Gly Val Ile Arg Arg Gln Val His Ile Gly Gln Leu Tyr Ser Thr Asp
  64             69             74             79
aag ctg atc att gag aat cga gac atg ccc agg acc tag caagccgggg      470
Lys Leu Ile Ile Glu Asn Arg Asp Met Pro Arg Thr *
  80             85             90
accagccacc agtggcggcc agggaccacc ttcagcatcc actctctgtt tgagctgggg      530
gctcccaaaa ccagcttaca atagcctttt gcg      563
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<212> DNA  
<213> Homo sapiens

<220>  
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<222> (33)..(1835)

<400> 542

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gcacgagcgg gtccggggagc gcggcggaga cg atg cct gag atc aga gtc acg      53
Met Pro Glu Ile Arg Val Thr
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ccc ttg ggg gcc ggc cag gac gtg ggc cga agc tgc atc ctg gtc tcc	101
Pro Leu Gly Ala Gly Gln Asp Val Gly Arg Ser Cys Ile Leu Val Ser	
8 13 18 23	
att gcg ggc aag aat gtc atg ctg gac tgt gga atg cac atg ggc ttc	149
Ile Ala Gly Lys Asn Val Met Leu Asp Cys Gly Met His Met Gly Phe	
24 29 34 39	
aat gac gac cga cgc ttc cct gac ttc tcc tac atc acc cag aac ggc	197
Asn Asp Asp Arg Arg Phe Pro Asp Phe Ser Tyr Ile Thr Gln Asn Gly	
40 45 50 55	
cgc cta aca gac ttc ctg gac tgt gtg atc att agc cac ttc cac ctg	245
Arg Leu Thr Asp Phe Leu Asp Cys Val Ile Ile Ser His Phe His Leu	
56 61 66 71	
gac cac tgc ggg gca ctc ccc tac ttc agc gag atg gtg ggc tac gac	293
Asp His Cys Gly Ala Leu Pro Tyr Phe Ser Glu Met Val Gly Tyr Asp	
72 77 82 87	
ggc ccc atc tac atg act cac ccc acc cag gcc atc tgc ccc atc ttg	341
Gly Pro Ile Tyr Met Thr His Pro Thr Gln Ala Ile Cys Pro Ile Leu	
88 93 98 103	
ctg gag gac tac cgc aag atc gcc gta gac aag aag ggc gag gcc aac	389
Leu Glu Asp Tyr Arg Lys Ile Ala Val Asp Lys Lys Gly Glu Ala Asn	
104 109 114 119	
ttc ttc acc tcc cag atg atc aaa gac tgc atg aag aag gtg gtg gct	437
Phe Phe Thr Ser Gln Met Ile Lys Asp Cys Met Lys Lys Val Val Ala	
120 125 130 135	
gtc cac ctc cac cag acg gtc cag gta gat gat gag ctg gag atc aag	485
Val His Leu His Gln Thr Val Gln Val Asp Asp Glu Leu Glu Ile Lys	
136 141 146 151	
gcc tac tat gca ggc cac gtg ctg ggg gca gcc atg ttc cag att aaa	533
Ala Tyr Tyr Ala Gly His Val Leu Gly Ala Ala Met Phe Gln Ile Lys	
152 157 162 167	
gtg ggc tca gag tct gtg gtc tac acg ggt gat tat aac atg acc cca	581
Val Gly Ser Glu Ser Val Val Tyr Thr Gly Asp Tyr Asn Met Thr Pro	
168 173 178 183	
gac cga cac tta gga gct gcc tgg att gac aag tgc cgc ccc aac ctg	629
Asp Arg His Leu Gly Ala Ala Trp Ile Asp Lys Cys Arg Pro Asn Leu	
184 189 194 199	
ctc atc aca gag tcc acg tac gcc acg acc atc cgt gac tcc aag cgc	677
Leu Ile Thr Glu Ser Thr Tyr Ala Thr Thr Ile Arg Asp Ser Lys Arg	
200 205 210 215	
tgc cgg gag cga gac ttc ctg aag aaa gtc cac gag acc gtg gag cgt	725
Cys Arg Glu Arg Asp Phe Leu Lys Lys Val His Glu Thr Val Glu Arg	
216 221 226 231	

ggt ggg aag gtg ctg ata cct gtg ttc gcg ctg ggc cgc gcc cag gag	773
Gly Gly Lys Val Leu Ile Pro Val Phe Ala Leu Gly Arg Ala Gln Glu	
232 237 242 247	
ctc tgc atc ctc ctg gag acc ttc tgg gag cgc atg aac ctg aag gtg	821
Leu Cys Ile Leu Leu Glu Thr Phe Trp Glu Arg Met Asn Leu Lys Val	
248 253 258 263	
ccc atc tac ttc tcc acg ggg ctg acc gag aag gcc aac cac tac tac	869
Pro Ile Tyr Phe Ser Thr Gly Leu Thr Glu Lys Ala Asn His Tyr Tyr	
264 269 274 279	
aag ctg ttc atc ccc tgg acc aac cag aag atc cgc aag act ttc gtg	917
Lys Leu Phe Ile Pro Trp Thr Asn Gln Lys Ile Arg Lys Thr Phe Val	
280 285 290 295	
cag agg aac atg ttt gag ttc aag cac atc aag gcc ttc gac cgg gct	965
Gln Arg Asn Met Phe Glu Phe Lys His Ile Lys Ala Phe Asp Arg Ala	
296 301 306 311	
ttt gct gac aac cca gga ccg atg gtt gtg ttt gcc acg cca gga atg	1013
Phe Ala Asp Asn Pro Gly Pro Met Val Val Phe Ala Thr Pro Gly Met	
312 317 322 327	
ctg cac gct ggg cag tcc ctg cag atc ttc cgg aaa tgg gcc gga aac	1061
Leu His Ala Gly Gln Ser Leu Gln Ile Phe Arg Lys Trp Ala Gly Asn	
328 333 338 343	
gaa aag aac atg gtc atc atg ccc ggc tac tgc gtg cag ggc acc gtc	1109
Glu Lys Asn Met Val Ile Met Pro Gly Tyr Cys Val Gln Gly Thr Val	
344 349 354 359	
ggc cac aag atc ctc agc ggg cag cgg aag ctc gag atg gag ggg cgg	1157
Gly His Lys Ile Leu Ser Gly Gln Arg Lys Leu Glu Met Glu Gly Arg	
360 365 370 375	
cag gtg ctg gag gtc aag atg cag gtg gag tac atg tca ttc agc gca	1205
Gln Val Leu Glu Val Lys Met Gln Val Glu Tyr Met Ser Phe Ser Ala	
376 381 386 391	
cac gcg gac gcc aag ggc atc atg cag ctg gtg ggc cag gca gag ccg	1253
His Ala Asp Ala Lys Gly Ile Met Gln Leu Val Gly Gln Ala Glu Pro	
392 397 402 407	
gag agc gtg ctg ctg gtg cat ggc gag gcc aag aag atg gag ttc ctg	1301
Glu Ser Val Leu Leu Val His Gly Glu Ala Lys Lys Met Glu Phe Leu	
408 413 418 423	
aag cag aag atc gag cag gag ctc cgg gtc aac tgc tac atg ccg gcc	1349
Lys Gln Lys Ile Glu Gln Glu Leu Arg Val Asn Cys Tyr Met Pro Ala	
424 429 434 439	
aat ggc gag acg gtg acg ctg ccc aca agc ccc agc atc ccc gta ggc	1397
Asn Gly Glu Thr Val Thr Leu Pro Thr Ser Pro Ser Ile Pro Val Gly	
440 445 450 455	

atc tcg ctg ggg ctg ctg aag cgg gag atg gcg cag ggg ctg ctc cct	1445
Ile Ser Leu Gly Leu Leu Lys Arg Glu Met Ala Gln Gly Leu Leu Pro	
456 461 466 471	
gag gcc aag aag cct cgg ctc ctg cac ggc acc ctg atc atg aag gac	1493
Glu Ala Lys Lys Pro Arg Leu Leu His Gly Thr Leu Ile Met Lys Asp	
472 477 482 487	
agc aac ttc cgg ctg gtg tcc tca gag caa gcc ctc aaa gag ctg ggt	1541
Ser Asn Phe Arg Leu Val Ser Ser Glu Gln Ala Leu Lys Glu Leu Gly	
488 493 498 503	
ctg gct gag cac cag ctg cgc ttc acc tgc cgc gtg cac ctg cat gac	1589
Leu Ala Glu His Gln Leu Arg Phe Thr Cys Arg Val His Leu His Asp	
504 509 514 519	
aca cgc aag gag cag gag acg gca ttg cgc gtc tac agc cac ctc aag	1637
Thr Arg Lys Glu Gln Glu Thr Ala Leu Arg Val Tyr Ser His Leu Lys	
520 525 530 535	
agc gtc ctg aag gac cac tgt gtg cag cac ctc cca gac ggc tct gtg	1685
Ser Val Leu Lys Asp His Cys Val Gln His Leu Pro Asp Gly Ser Val	
536 541 546 551	
act gtg gag tcc gtc ctc ctc cag gcc gcc gcc cct tct gag gac cca	1733
Thr Val Glu Ser Val Leu Leu Gln Ala Ala Ala Pro Ser Glu Asp Pro	
552 557 562 567	
ggc acc aag gtg ctg ctg gtc tcc tgg acc tac cag gac gag gag ctg	1781
Gly Thr Lys Val Leu Leu Val Ser Trp Thr Tyr Gln Asp Glu Glu Leu	
568 573 578 583	
ggg agc ttc ctc aca tct ctg ctg aag aag ggc ctc ccc cag gcc ccc	1829
Gly Ser Phe Leu Thr Ser Leu Leu Lys Lys Gly Leu Pro Gln Ala Pro	
584 589 594 599	
agc tga ggccggcaac tcaccagcc gccacctctg ccctctccca gctggacaga	1885
Ser *	
600	
ccctgggcct gcacttcagg actgtgggtg ccctgggtga acagaccctg caggtcccat	1945
ccctggggac agaggccttg tgtcacctgc ctgcccaggc agctgtttgc agctgaagaa	2005
acaaactggt ctccaggctg tcttgccctt attcctggtt agggcagggtg gtcctagaca	2065
gcagtttcca gtaaaagctg aacaaaaaaaa aaaaa	2100

<210> 543  
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 <212> DNA  
 <213> Homo sapiens

<220>

<221> CDS

<222> (40)..(453)

<400> 543

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                                         Met Thr Ser His Ala
                                         1

cgc gta cgt aag ctt gga tcc tct aga gcg gcc cta cta cta cta aat   102
Arg Val Arg Lys Leu Gly Ser Ser Arg Ala Ala Leu Leu Leu Leu Asn
   6                      11                      16                      21

tcg cgg ccg cgt cga cca aaa atg gcg gta gtt ggt gtg tcc tcg gtt   150
Ser Arg Pro Arg Arg Pro Lys Met Ala Val Val Gly Val Ser Ser Val
  22                      27                      32                      37

tct cgg ctg ctg ggt cgg tcc cgc cca cag ctg ggg cgg cct atg tcg   198
Ser Arg Leu Leu Gly Arg Ser Arg Pro Gln Leu Gly Arg Pro Met Ser
  38                      43                      48                      53

agt ggc gcc cat ggc gaa gag ggc tca gct cgc atg tgg aag act ctc   246
Ser Gly Ala His Gly Glu Glu Gly Ser Ala Arg Met Trp Lys Thr Leu
  54                      59                      64                      69

acc ttc ttc gtc gcg ctc ccc ggg gtg gca gtc agc atg ctg aat gtg   294
Thr Phe Phe Val Ala Leu Pro Gly Val Ala Val Ser Met Leu Asn Val
  70                      75                      80                      85

tac ctg aag tcg cac cac gga gag cac gag aga ccc gag ttc atc gcc   342
Tyr Leu Lys Ser His His Gly Glu His Glu Arg Pro Glu Phe Ile Ala
  86                      91                      96                      101

tac ccc cat ctc cgc atc agg acc aag ccg ttt ccc tgg gga gat ggt   390
Tyr Pro His Leu Arg Ile Arg Thr Lys Pro Phe Pro Trp Gly Asp Gly
 102                      107                      112                      117

aac cat act cta ttc cat aac cct cat gtg aat cca ctt cca act ggc   438
Asn His Thr Leu Phe His Asn Pro His Val Asn Pro Leu Pro Thr Gly
 118                      123                      128                      133

tac gaa gat gaa taa agagaatctg gaccactacc cgggcaccag ggaccacagc   493
Tyr Glu Asp Glu *
134

actggttttg accgttactc tgcacatgga ccagaaaaag tatatgggac cttaagctca   553

ccttcttttac ttgtatcaaa tgatgactgg tatactggtc tcccatccct ttgcttggtg   613

caggagatgg cttaaataaa taacttaaac ttaaaaaaaaa aaaa   657
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<211> 1505

<212> DNA

<213> Homo sapiens

<220>  
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 <222> (72)..(1208)

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ccgggtctcaa a atg gag gta aaa ccg ccg ccc ggt cgc ccc cag ccc gac	110
Met Glu Val Lys Pro Pro Pro Gly Arg Pro Gln Pro Asp	
1 5 10	
tcc ggc cgt cgc cgt cgc cgc cgg ggg gag gag ggc cat gat cca aag	158
Ser Gly Arg Arg Arg Arg Arg Arg Gly Glu Glu Gly His Asp Pro Lys	
14 19 24 29	
gaa cca gag cag ttg aga aaa ctg ttt att ggt ggt ctg agc ttt gaa	206
Glu Pro Glu Gln Leu Arg Lys Leu Phe Ile Gly Gly Leu Ser Phe Glu	
30 35 40 45	
act aca gat gat agt tta cga gaa cat ttt gag aaa tgg ggc aca ctc	254
Thr Thr Asp Asp Ser Leu Arg Glu His Phe Glu Lys Trp Gly Thr Leu	
46 51 56 61	
aca gat tgt gtg gta atg aga gac ccc caa aca aaa cgt tcc agg ggc	302
Thr Asp Cys Val Val Met Arg Asp Pro Gln Thr Lys Arg Ser Arg Gly	
62 67 72 77	
ttt ggt ttt gtg act tat tct tgt gtt gaa gag gtg gat gca gca atg	350
Phe Gly Phe Val Thr Tyr Ser Cys Val Glu Glu Val Asp Ala Ala Met	
78 83 88 93	
tgt gct cga cca cac aag gtt gat ggg cgt gta gtg gaa cca aag aga	398
Cys Ala Arg Pro His Lys Val Asp Gly Arg Val Val Glu Pro Lys Arg	
94 99 104 109	
gct gtt tct aga gag gat tct gta aag cct ggt gcc cat cta aca gtg	446
Ala Val Ser Arg Glu Asp Ser Val Lys Pro Gly Ala His Leu Thr Val	
110 115 120 125	
aag aaa att ttt gtt ggt ggt att aaa gaa gat aca gaa gaa tat aat	494
Lys Lys Ile Phe Val Gly Gly Ile Lys Glu Asp Thr Glu Glu Tyr Asn	
126 131 136 141	
ttg aga gac tac ttt gaa aag tat ggc aag att gaa acc ata gaa gtt	542
Leu Arg Asp Tyr Phe Glu Lys Tyr Gly Lys Ile Glu Thr Ile Glu Val	
142 147 152 157	
atg gaa gac agg cag agt gga aaa aag aga gga ttt gct ttt gta act	590
Met Glu Asp Arg Gln Ser Gly Lys Lys Arg Gly Phe Ala Phe Val Thr	
158 163 168 173	
ttt gat gat cat gat aca gtt gat aaa att gtt gtt cag aaa tac cac	638
Phe Asp Asp His Asp Thr Val Asp Lys Ile Val Val Gln Lys Tyr His	
174 179 184 189	
act att aat ggg cat aat tgt gaa gtg aaa aag gcc ctt tct aaa caa	686

Thr	Ile	Asn	Gly	His	Asn	Cys	Glu	Val	Lys	Lys	Ala	Leu	Ser	Lys	Gln		
190					195					200					205		
gag atg cag tct gct gga tca cag aga ggt cgt gga ggt gga tct ggc 734																	
Glu	Met	Gln	Ser	Ala	Gly	Ser	Gln	Arg	Gly	Arg	Gly	Gly	Gly	Ser	Gly		
206					211					216					221		
aat ttt atg ggt cgc gga ggg aac ttt gga ggt ggt gga ggt aat ttt 782																	
Asn	Phe	Met	Gly	Arg	Gly	Gly	Asn	Phe	Gly	Gly	Gly	Gly	Gly	Asn	Phe		
222					227					232					237		
ggc cgt ggt gga aac ttt ggt gga aga gga ggc tat ggt ggt gga ggt 830																	
Gly	Arg	Gly	Gly	Asn	Phe	Gly	Gly	Arg	Gly	Gly	Tyr	Gly	Gly	Gly	Gly		
238					243					248					253		
ggt ggc agc aga ggt agt tat gga gga ggt gat ggt gga tat aat gga 878																	
Gly	Gly	Ser	Arg	Gly	Ser	Tyr	Gly	Gly	Gly	Asp	Gly	Gly	Tyr	Asn	Gly		
254					259					264					269		
ttt gga ggt gat ggt ggc aac tat ggc ggt ggt cct ggt tat agt agt 926																	
Phe	Gly	Gly	Asp	Gly	Gly	Asn	Tyr	Gly	Gly	Gly	Pro	Gly	Tyr	Ser	Ser		
270					275					280					285		
aga ggg ggc tat ggt ggt ggt gga cca gga tat gga aac caa ggt ggt 974																	
Arg	Gly	Gly	Tyr	Gly	Gly	Gly	Gly	Pro	Gly	Tyr	Gly	Asn	Gln	Gly	Gly		
286					291					296					301		
gga tat ggt gga ggt gga gga tat gat ggt tac aat gaa gga gga aat 1022																	
Gly	Tyr	Gly	Gly	Gly	Gly	Gly	Tyr	Asp	Gly	Tyr	Asn	Glu	Gly	Gly	Asn		
302					307					312					317		
ttt ggc ggt ggt aac tat ggt ggt ggt ggg aac tat aat gat ttt gga 1070																	
Phe	Gly	Gly	Gly	Asn	Tyr	Gly	Gly	Gly	Gly	Asn	Tyr	Asn	Asp	Phe	Gly		
318					323					328					333		
aat tat agt gga caa cag caa tca aat tat gga ccc atg aaa ggg ggc 1118																	
Asn	Tyr	Ser	Gly	Gln	Gln	Gln	Ser	Asn	Tyr	Gly	Pro	Met	Lys	Gly	Gly		
334					339					344					349		
agt ttt ggt gga aga agc tcg ggc agt ccc tat ggt ggt ggt tat gga 1166																	
Ser	Phe	Gly	Gly	Arg	Ser	Ser	Gly	Ser	Pro	Tyr	Gly	Gly	Gly	Tyr	Gly		
350					355					360					365		
tct ggt ggt gga agt ggt gga tat ggt agc aga agg ttc taa aaacagc 1215																	
Ser	Gly	Gly	Gly	Ser	Gly	Gly	Tyr	Gly	Ser	Arg	Arg	Phe	*				
366					371					376							
agaaaagggc tacagttctt agcaggagag agagcgagga gttgtcagga aagctgcagg 1275																	
ttacttttgag acagtcgtcc caaatgcatt agaggaactg taaaaatctg ccacagaagg 1335																	
aacgatgatc catagtcaga aaagttactg cagcttaaac aggaaccctt cttgttcagg 1395																	
actgtcatag ccacagtttg caaaagtgcg gctattgatt aatgcatgta gtgtcaatta 1455																	
gatgtcaatc ctgaggcttt tatctgttgt gcttgccctt tcctttcctt 1505																	



<210> 545  
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 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> CDS  
 <222> (168)..(542)

<400> 545

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gaaacccag gcgtggagat tgatcctgcg agagaagggg gttcatc  atg gcg gat      176
                                     Met Ala Asp
                                     1

gac cta aag cga ttc ttg tat aaa aag tta cca agt gtt gaa ggg ctc      224
Asp Leu Lys Arg Phe Leu Tyr Lys Lys Leu Pro Ser Val Glu Gly Leu
  4                      9                      14                      19

cat gcc att gtt gtg tca gat aga gat gga gta cct gtt att aaa gtg      272
His Ala Ile Val Val Ser Asp Arg Asp Gly Val Pro Val Ile Lys Val
  20                      25                      30                      35

gca aat gac aat gct cca gag cat gct ttg cga cct ggt ttc tta tcc      320
Ala Asn Asp Asn Ala Pro Glu His Ala Leu Arg Pro Gly Phe Leu Ser
  36                      41                      46                      51

act ttt gcc ctt gca aca gac caa gga agc aaa ctt gga ctt tcc aaa      368
Thr Phe Ala Leu Ala Thr Asp Gln Gly Ser Lys Leu Gly Leu Ser Lys
  52                      57                      62                      67

aat aaa agt atc atc tgt tac tat aac acc tac cag gtg gtt caa ttt      416
Asn Lys Ser Ile Ile Cys Tyr Tyr Asn Thr Tyr Gln Val Val Gln Phe
  68                      73                      78                      83

aat cgt tta cct ttg gtg gtg agt ttc ata gcc agc agc agt gcc aat      464
Asn Arg Leu Pro Leu Val Val Ser Phe Ile Ala Ser Ser Ser Ala Asn
  84                      89                      94                      99

aca gga cta att gtc agc cta gaa aag gaa ctt gct cca ttg ttt gaa      512
Thr Gly Leu Ile Val Ser Leu Glu Lys Glu Leu Ala Pro Leu Phe Glu
  100                      105                      110                      115

gaa ctg aga caa gtt gtg gaa gtt tct taa t ctgacagtgg tttcagtgtg      563
Glu Leu Arg Gln Val Val Glu Val Ser *
  116                      121

taccttatct tcattataac aacacaatat caatccagca atctttagac tacaataata      623
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 Met Ala Ser Ala Gly Gly  
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 Glu Asp Cys Glu Ser Pro Ala Pro Glu Ala Asp Arg Pro His Gln Arg  
 7 12 17 22  
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 Pro Phe Leu Ile Gly Val Ser Gly Gly Thr Ala Ser Gly Lys Ser Thr  
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 gtg tgt gag aag atc atg gag ttg ctg gga cag aac gag gtg gaa cag 256  
 Val Cys Glu Lys Ile Met Glu Leu Leu Gly Gln Asn Glu Val Glu Gln  
 39 44 49 54

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Asn Ile Val Glu Gly Lys Thr Val Glu Val Pro Thr Tyr Asp Phe Val	
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Thr His Ser Arg Leu Pro Glu Thr Thr Val Tyr Pro Ala Asp Val	
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Val Leu Phe Glu Gly Ile Leu Val Phe Tyr Ser Gln Glu Ile Arg Asp	
135 140 145 150	
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Met Phe His Leu Arg Leu Phe Val Asp Thr Asp Ser Asp Val Arg Leu	
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Ser Arg Arg Val Leu Arg Asp Val Arg Arg Gly Arg Asp Leu Glu Gln	
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Ile Leu Thr Gln Tyr Thr Thr Phe Val Lys Pro Ala Phe Glu Glu Phe	
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Cys Leu Pro Thr Lys Lys Tyr Ala Asp Val Ile Ile Pro Arg Gly Val	
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Asp Asn Met Val Ala Ile Asn Leu Ile Val Gln His Ile Gln Asp Ile	
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Leu Asn Gly Asp Ile Cys Lys Trp His Arg Gly Gly Ser Asn Gly Arg	
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Ser Tyr Lys Arg Thr Phe Ser Glu Pro Gly Asp His Pro Gly Met Leu	
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Thr Ser Gly Lys Arg Ser His Leu Glu Ser Ser Ser Arg Pro His *	
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 Met Ser Cys  
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 aca att gag aag gca ctt gcc gac gct aaa gct ctt gtt gaa aga tta 163  
 Thr Ile Glu Lys Ala Leu Ala Asp Ala Lys Ala Leu Val Glu Arg Leu  
 4 9 14 19  
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 Arg Asp His Asp Asp Ala Ala Glu Ser Leu Ile Glu Gln Thr Thr Ala  
 20 25 30 35  
 ctc aac aag cga gta gaa gcc atg aaa cag tat cag gaa gaa att caa 259  
 Leu Asn Lys Arg Val Glu Ala Met Lys Gln Tyr Gln Glu Glu Ile Gln  
 36 41 46 51  
 gaa ctt aat gaa gtc gcg aga cat cgg cca cgg tcc acg tta gtt atg 307  
 Glu Leu Asn Glu Val Ala Arg His Arg Pro Arg Ser Thr Leu Val Met  
 52 57 62 67  
 gga atc cag caa gaa aac aga caa atc aga gag ttg caa caa gaa aac 355  
 Gly Ile Gln Gln Glu Asn Arg Gln Ile Arg Glu Leu Gln Gln Glu Asn  
 68 73 78 83  
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 Lys Glu Leu Arg Thr Ser Leu Glu Glu His Gln Ser Ala Leu Glu Leu  
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 Ile Met Ser Lys Tyr Arg Glu Gln Met Phe Arg Leu Leu Met Ala Ser  
 100 105 110 115

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116 121 126 131	
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Lys Glu Leu Gln Ala His Val Asp Gln Ile Thr Glu Met Ala Ala Val	
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Met Arg Lys Pro Leu Lys Leu Thr Ser Asn Arg Val Ala Arg Asn Lys	
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Asn Glu Tyr Phe Asn Leu Asn Lys Lys Thr Lys Ala *	
164 169 174	
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catttgga	240
tgcagg	300
agaaggaaga gctgaacg	360
agcc atg acc ctc tgc att aca aac cca tta tgg gta aca aaa act cgc	409
Met Thr Leu Cys Ile Thr Asn Pro Leu Trp Val Thr Lys Thr Arg	
1 5 10	

ctt atg tta cag tat gat gct gtt gtt aac tcc cca cac cga caa tat	457
Leu Met Leu Gln Tyr Asp Ala Val Val Asn Ser Pro His Arg Gln Tyr	
16 21 26 31	
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Lys Gly Met Phe Asp Thr Leu Val Lys Ile Tyr Lys Tyr Glu Gly Val	
32 37 42 47	
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Arg Gly Leu Tyr Lys Gly Phe Val Pro Gly Leu Phe Gly Thr Ser His	
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Gly Ala Leu Gln Phe Met Ala Tyr Glu Leu Leu Lys Leu Lys Tyr Asn	
64 69 74 79	
cag cat atc aat aga tta cca gaa gcc cag ttg agc aca gta gaa tat	649
Gln His Ile Asn Arg Leu Pro Glu Ala Gln Leu Ser Thr Val Glu Tyr	
80 85 90 95	
ata tct gtt gca gca cta tcc aaa ata ttt gct gtc gca gca aca tac	697
Ile Ser Val Ala Ala Leu Ser Lys Ile Phe Ala Val Ala Ala Thr Tyr	
96 101 106 111	
cca tat caa gtc gta aga gct cgt ctt cag gat caa cac atg ttt tac	745
Pro Tyr Gln Val Val Arg Ala Arg Leu Gln Asp Gln His Met Phe Tyr	
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Ser Gly Val Ile Asp Val Ile Thr Lys Thr Trp Arg Lys Glu Gly Val	
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Gly Gly Phe Tyr Lys Gly Ile Ala Pro Asn Leu Ile Arg Val Thr Pro	
144 149 154 159	
gcc tgc tgt att acc ttt gtg gta tat gaa aac gtc tca cat ttt tta	889
Ala Cys Cys Ile Thr Phe Val Val Tyr Glu Asn Val Ser His Phe Leu	
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Leu Asp Leu Arg Glu Lys Arg Lys *	
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Arg Glu Leu Arg Ala Leu	Leu Leu Trp Gly Arg	Arg Leu Arg Pro Leu	
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Leu Arg Ala Pro Ala Leu	Ala Ala Val Pro Gly	Gly Lys Pro Ile Leu	
19	24	29	34
tgt cct cgg agg acc aca	gcc cag ttg ggc ccc	agg cga aac cca gcc	199
Cys Pro Arg Arg Thr Thr	Ala Gln Leu Gly Pro	Arg Arg Asn Pro Ala	
35	40	45	50
tgg agc ttg cag gca gga	cga ctg ttc agc acg	cag acc gcc gag gac	247
Trp Ser Leu Gln Ala Gly	Arg Leu Phe Ser Thr	Gln Thr Ala Glu Asp	
51	56	61	66
aag gag gaa ccc ctg cac	tcg att atc agc agc	aca gag agc gtg cag	295
Lys Glu Glu Pro Leu His	Ser Ile Ile Ser Ser	Thr Glu Ser Val Gln	
67	72	77	82
ggg tcc act tcc aaa cat	gag ttc cag gcc gag	aca aag aag ctt ttg	343
Gly Ser Thr Ser Lys His	Glu Phe Gln Ala Glu	Thr Lys Lys Leu Leu	
83	88	93	98
gac att gtt gcc cgg tcc	ctg tac tca gaa aaa	gag gtg ttt ata cgg	391



Asp	Ile	Val	Ala	Arg	Ser	Leu	Tyr	Ser	Glu	Lys	Glu	Val	Phe	Ile	Arg		
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Glu	Leu	Ile	Ser	Asn	Ala	Ser	Asp	Ala	Leu	Glu	Lys	Leu	Arg	His	Lys		
115					120					125					130		
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131					136					141					146		
acc aat gcc gag aaa ggc acc atc acc atc cag gat act ggt atc ggg 535																	
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Met	Thr	Gln	Glu	Glu	Leu	Val	Ser	Asn	Leu	Gly	Thr	Ile	Ala	Arg	Ser		
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179					184					189					194		
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291					296					301					306		
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307					312					317					322		
gac aag ccc cgc tac acc ctg cac tat aag acg gac gca ccg ctc aac 1063																	
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323	328	333	338	
atc cgc agc atc ttc tac gtg ccc gac atg aaa ccg tcc atg ttt gat				1111
Ile Arg Ser Ile Phe Tyr Val Pro Asp Met Lys Pro Ser Met Phe Asp				
339	344	349	354	
gtg agc cgg gag ctg ggc tcc agc gtt gca ctg tac agc cgc aaa gtc				1159
Val Ser Arg Glu Leu Gly Ser Ser Val Ala Leu Tyr Ser Arg Lys Val				
355	360	365	370	
ctc atc cag acc aag gcc acg gac atc ctg ccc aag tgg ctg cgc ttc				1207
Leu Ile Gln Thr Lys Ala Thr Asp Ile Leu Pro Lys Trp Leu Arg Phe				
371	376	381	386	
atc cga ggt gtg gtg gac agt gag gac att ccc ctg aac ctc agc cgg				1255
Ile Arg Gly Val Val Asp Ser Glu Asp Ile Pro Leu Asn Leu Ser Arg				
387	392	397	402	
gag ctg ctg cag gag agc gca ctc atc agg aaa ctc cgg gac gtt tta				1303
Glu Leu Leu Gln Glu Ser Ala Leu Ile Arg Lys Leu Arg Asp Val Leu				
403	408	413	418	
cag cag agg ctg atc aaa ttc ttc att gac cag agt aaa aaa gat gct				1351
Gln Gln Arg Leu Ile Lys Phe Phe Ile Asp Gln Ser Lys Lys Asp Ala				
419	424	429	434	
gag aag tat gca aag ttt ttt gaa gat tac ggc ctg ttc atg cgg gag				1399
Glu Lys Tyr Ala Lys Phe Phe Glu Asp Tyr Gly Leu Phe Met Arg Glu				
435	440	445	450	
ggc att gtg acc gcc acc gag cag gag gtc aag gag gac ata gca aag				1447
Gly Ile Val Thr Ala Thr Glu Gln Glu Val Lys Glu Asp Ile Ala Lys				
451	456	461	466	
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467	472	477	482	
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Leu Ser Glu Tyr Ala Ser Arg Met Arg Ala Gly Thr Arg Asn Ile Tyr				
483	488	493	498	
tac ctg tgc gcc ccc aac cgt cac ctg gca gag cac tca ccc tac tat				1591
Tyr Leu Cys Ala Pro Asn Arg His Leu Ala Glu His Ser Pro Tyr Tyr				
499	504	509	514	
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Glu Ala Met Lys Lys Lys Asp Thr Glu Val Leu Phe Cys Phe Glu Gln				
515	520	525	530	
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Phe Asp Glu Leu Thr Leu Leu His Leu Arg Glu Phe Asp Lys Lys Lys				
531	536	541	546	
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Leu Ile Ser Val Glu Thr Asp Ile Val Val Asp His Tyr Lys Glu Glu				
547	552	557	562	

aag ttt gag gac agg tcc cca gcc gcc gag tgc cta tca gag aag gag	1783
Lys Phe Glu Asp Arg Ser Pro Ala Ala Glu Cys Leu Ser Glu Lys Glu	
563 568 573 578	
acg gag gag ctc atg gcc tgg atg aga aat gtg ctg ggg tog cgt gtc	1831
Thr Glu Glu Leu Met Ala Trp Met Arg Asn Val Leu Gly Ser Arg Val	
579 584 589 594	
acc aac gtg aag gtg acc ctc cga ctg gac acc cac cct gcc atg gtc	1879
Thr Asn Val Lys Val Thr Leu Arg Leu Asp Thr His Pro Ala Met Val	
595 600 605 610	
acc gtg ctg gag atg ggg gct gcc cgc cac ttc ctg cgc atg cag cag	1927
Thr Val Leu Glu Met Gly Ala Ala Arg His Phe Leu Arg Met Gln Gln	
611 616 621 626	
ctg gcc aag acc cag gag gag cgc gca cag ctc ctg cag ccc acg ctg	1975
Leu Ala Lys Thr Gln Glu Glu Arg Ala Gln Leu Leu Gln Pro Thr Leu	
627 632 637 642	
gag atc aac ccc agg cac gcg ctc atc aag aag ctg aat cag ctg cgc	2023
Glu Ile Asn Pro Arg His Ala Leu Ile Lys Lys Leu Asn Gln Leu Arg	
643 648 653 658	
gca agc gag cct ggc ctg gct cag ctg ctg gtg gat cag ata tac gag	2071
Ala Ser Glu Pro Gly Leu Ala Gln Leu Leu Val Asp Gln Ile Tyr Glu	
659 664 669 674	
aac gcc atg att gct gct gga ctt gtt gac gac cct agg gcc atg gtg	2119
Asn Ala Met Ile Ala Ala Gly Leu Val Asp Asp Pro Arg Ala Met Val	
675 680 685 690	
ggc cgc ttg aat gag ctg ctt gtc aag gcc ctg gag cga cac tga cag	2167
Gly Arg Leu Asn Glu Leu Leu Val Lys Ala Leu Glu Arg His *	
691 696 701	
ccagggggcc agaaggactg acaccacaga tgacagcccc acctccttga gctttattta	2227
cctaaattta aaggatatttc ttaacccgag tgttgtgttg gctttttttc tgggtcctgt	2287
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gcataccct cactggatag tggctactga tggcttgggc tgcaggcaag tgggcacagg	2407
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ccatatagt cccgt	2482

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 <222> (64)..(759)

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Met Ala Gly Met Val Asp Phe Gln Asp Glu Glu Gln Val Lys Ser	
1 5 10	
ttt ttg gag aac atg gag gtg gag tgc aac tac cac tgc tac cac gag	156
Phe Leu Glu Asn Met Glu Val Glu Cys Asn Tyr His Cys Tyr His Glu	
16 21 26 31	
aag gac ccg gac ggt tgc tat cgg ctg gtg gac tat ttg gaa ggg atc	204
Lys Asp Pro Asp Gly Cys Tyr Arg Leu Val Asp Tyr Leu Glu Gly Ile	
32 37 42 47	
cgg aag aat ttt gat gag gct gcc aag gtg ttg aag ttt aac tgt gaa	252
Arg Lys Asn Phe Asp Glu Ala Ala Lys Val Leu Lys Phe Asn Cys Glu	
48 53 58 63	
gag aac cag cac agt gat agc tgc tac aaa ctg ggg gcc tac tat gtg	300
Glu Asn Gln His Ser Asp Ser Cys Tyr Lys Leu Gly Ala Tyr Tyr Val	
64 69 74 79	
act gga aaa ggt ggt ctg acc cag gac ctg aaa gct gcc gcc agg tgc	348
Thr Gly Lys Gly Gly Leu Thr Gln Asp Leu Lys Ala Ala Ala Arg Cys	
80 85 90 95	
ttt ttg atg gcg tgt gag aag cct gga aag aag tca ata gca gca tgt	396
Phe Leu Met Ala Cys Glu Lys Pro Gly Lys Lys Ser Ile Ala Ala Cys	
96 101 106 111	
cac aac gtt ggc ctc ctg gca cat gat gga cag gtt aat gag gat ggc	444
His Asn Val Gly Leu Leu Ala His Asp Gly Gln Val Asn Glu Asp Gly	
112 117 122 127	
cag cct gac ttg gga aag gcc agg gac tac tac aca agg gcc tgt gat	492
Gln Pro Asp Leu Gly Lys Ala Arg Asp Tyr Tyr Thr Arg Ala Cys Asp	
128 133 138 143	
ggg ggc tat act tcc agt tgc ttc aac ctc agt gcc atg ttc ctg cag	540
Gly Gly Tyr Thr Ser Ser Cys Phe Asn Leu Ser Ala Met Phe Leu Gln	
144 149 154 159	
ggg gcc cca ggc ttt ccc aag gac atg gac ctg gca tgt aaa tac tcc	588
Gly Ala Pro Gly Phe Pro Lys Asp Met Asp Leu Ala Cys Lys Tyr Ser	
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aca ggg tcc tgg gcc cag tct gtg ctg acg cag ccg ccc tca gtg tct	156	
Thr Gly Ser Trp Ala Gln Ser Val Leu Thr Gln Pro Pro Ser Val Ser		
15 20 25 30		
ggg gcc cca ggg cag agg gtc acc atc tcc tgc act ggg agc agc tcc	204	
Gly Ala Pro Gly Gln Arg Val Thr Ile Ser Cys Thr Gly Ser Ser Ser		
31 36 41 46		

Asn Ile Gly Ala Gly Tyr Asp Val His Trp Tyr Gln Gln Leu Pro Gly	
47 52 57 62	
aca gcc ccc aaa ctc ctc atc tat ggt aac agc aat cgg ccc tca ggg	300
Thr Ala Pro Lys Leu Leu Ile Tyr Gly Asn Ser Asn Arg Pro Ser Gly	
63 68 73 78	
gtc cct gac cga ttc tct ggc tcc aag tct ggc acc tca gcc tcc ctg	348
Val Pro Asp Arg Phe Ser Gly Ser Lys Ser Gly Thr Ser Ala Ser Leu	
79 84 89 94	
gcc atc act ggg ctc cag gct gag gat gag gct gat tat tac tgc cag	396
Ala Ile Thr Gly Leu Gln Ala Glu Asp Glu Ala Asp Tyr Tyr Cys Gln	
95 100 105 110	
tcc tat gac agc agc ctg agt ggt tct gtg gta ttc ggc gga ggg acc	444
Ser Tyr Asp Ser Ser Leu Ser Gly Ser Val Val Phe Gly Gly Gly Thr	
111 116 121 126	
aag ctg acc gtc cta ggt cag ccc aag gct gcc ccc tcg gtc act ctg	492
Lys Leu Thr Val Leu Gly Gln Pro Lys Ala Ala Pro Ser Val Thr Leu	
127 132 137 142	
ttc ccg ccc ctc ctc tga ggagct tcaagccaac aaggccacac tgggtgtgtct	546
Phe Pro Pro Leu Leu *	
143 148	
cataagtgac ttctaccgg gagccgtgac agtggcctg	585

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ctgcaaacgt caccagctc ctgggggcaca ctggactccc agatgagctt gtctctggatt	180
tgcagggagc ctggctccct aaaccttttg gccagatccc cacaggggaa ttgtgcaggt	240
gcgccctccc cagatcccca gctgggtattg gaatcacacc aactgtcaca catggggagg	300

gcagctgcac ccagccaccc tctgacttct ctctgccac agattggcca tctgcaagct	360
tcccttctcc gtggagagca ggaagacagt c atg gga cct cag gga gcc agg	412
Met Gly Pro Gln Gly Ala Arg	
1 5	
aga cag gct ttc ttg gca ttt ggg gat gtc act gtg gat ttc acc cag	460
Arg Gln Ala Phe Leu Ala Phe Gly Asp Val Thr Val Asp Phe Thr Gln	
8 13 18 23	
aag gaa tgg agg ctg ctg agc cct gct cag agg gcc ctg tac agg gag	508
Lys Glu Trp Arg Leu Leu Ser Pro Ala Gln Arg Ala Leu Tyr Arg Glu	
24 29 34 39	
gtg aca ctg gag aac tac agc cac ctg gtc tca cta gga att ctc cat	556
Val Thr Leu Glu Asn Tyr Ser His Leu Val Ser Leu Gly Ile Leu His	
40 45 50 55	
tct aaa cca gaa ctc atc agg cgg cta gag caa ggg gaa gtg ccc tgg	604
Ser Lys Pro Glu Leu Ile Arg Arg Leu Glu Gln Gly Glu Val Pro Trp	
56 61 66 71	
gga gaa gag aga aga cgc cgg cca ggc ccc tgt gca gga ata tat gca	652
Gly Glu Glu Arg Arg Arg Arg Pro Gly Pro Cys Ala Gly Ile Tyr Ala	
72 77 82 87	
gaa cat gtc ctg cgg ccc aag aat ctt gga ctt gca cat cag agg caa	700
Glu His Val Leu Arg Pro Lys Asn Leu Gly Leu Ala His Gln Arg Gln	
88 93 98 103	
cag caa cta caa ttt tct gat caa agc ttc cag agt gac aca gct gaa	748
Gln Gln Leu Gln Phe Ser Asp Gln Ser Phe Gln Ser Asp Thr Ala Glu	
104 109 114 119	
ggt caa gag aaa gaa aaa agc act aag ccc atg gca ttt tcc agc cca	796
Gly Gln Glu Lys Glu Lys Ser Thr Lys Pro Met Ala Phe Ser Ser Pro	
120 125 130 135	
ccc cta aga cat gca gta agc tca agg agg agg aac agt gta gtg gaa	844
Pro Leu Arg His Ala Val Ser Ser Arg Arg Arg Asn Ser Val Val Glu	
136 141 146 151	
ata gag tct agt caa ggc cag agg gaa aat cct aca gaa ata gac aaa	892
Ile Glu Ser Ser Gln Gly Gln Arg Glu Asn Pro Thr Glu Ile Asp Lys	
152 157 162 167	
gta ttg aaa gga ata gaa aat tca aga tgg gga gca ttc aag tgt gca	940
Val Leu Lys Gly Ile Glu Asn Ser Arg Trp Gly Ala Phe Lys Cys Ala	
168 173 178 183	
gag cgt ggg caa gac ttc agc cgg aag atg atg gta atc ata cac aaa	988
Glu Arg Gly Gln Asp Phe Ser Arg Lys Met Met Val Ile Ile His Lys	
184 189 194 199	
aaa gca cat tcc agg cag aaa ctt ttt aca tgc agg gag tgt cac cag	1036
Lys Ala His Ser Arg Gln Lys Leu Phe Thr Cys Arg Glu Cys His Gln	
200 205 210 215	

ggc ttt aga gat gag tca gca ttg ctc ttg cac cag aac aca cac aca	1084
Gly Phe Arg Asp Glu Ser Ala Leu Leu Leu His Gln Asn Thr His Thr	
216 221 226 231	
gga gag aag tcc tat gtg tgc agt gtg tgt ggg cga ggc ttc agc ctc	1132
Gly Glu Lys Ser Tyr Val Cys Ser Val Cys Gly Arg Gly Phe Ser Leu	
232 237 242 247	
aag gcc aac ctc ctc aga cac cag agg aca cac tca gga gag aag cct	1180
Lys Ala Asn Leu Leu Arg His Gln Arg Thr His Ser Gly Glu Lys Pro	
248 253 258 263	
ttt ctg tgc aag gtg tgt gga cga ggc tat acc agt aag tca tac ctc	1228
Phe Leu Cys Lys Val Cys Gly Arg Gly Tyr Thr Ser Lys Ser Tyr Leu	
264 269 274 279	
act gtg cat gag aga aca cac aca gga gag aag cct tat gaa tgc cag	1276
Thr Val His Glu Arg Thr His Thr Gly Glu Lys Pro Tyr Glu Cys Gln	
280 285 290 295	
gag tgt ggg cga agg ttt aac gat aag tcc tca tac aac aag cac ttg	1324
Glu Cys Gly Arg Arg Phe Asn Asp Lys Ser Ser Tyr Asn Lys His Leu	
296 301 306 311	
aag gcg cat tca ggg gag aag cct ttt gtg tgc aag gag tgt ggg cga	1372
Lys Ala His Ser Gly Glu Lys Pro Phe Val Cys Lys Glu Cys Gly Arg	
312 317 322 327	
ggc tat act aat aag tca tac ttc gtt gtg cac aag aga ata cac tca	1420
Gly Tyr Thr Asn Lys Ser Tyr Phe Val Val His Lys Arg Ile His Ser	
328 333 338 343	
gga gag aag cct tac aga tgc cag gag tgt ggc cga ggc ttt agc aat	1468
Gly Glu Lys Pro Tyr Arg Cys Gln Glu Cys Gly Arg Gly Phe Ser Asn	
344 349 354 359	
aag tca cac ctt atc aca cac cag agg aca cac tca ggg gag aag ccc	1516
Lys Ser His Leu Ile Thr His Gln Arg Thr His Ser Gly Glu Lys Pro	
360 365 370 375	
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Phe Ala Cys Arg Gln Cys Lys Gln Ser Phe Ser Val Lys Gly Ser Leu	
376 381 386 391	
ctc aga cac cag aga aca cac tca ggg gag aag cct ttt gtg tgc aag	1612
Leu Arg His Gln Arg Thr His Ser Gly Glu Lys Pro Phe Val Cys Lys	
392 397 402 407	
gat tgt gag cga agc ttt agc caa aag tca act ctt gtc tac cac cag	1660
Asp Cys Glu Arg Ser Phe Ser Gln Lys Ser Thr Leu Val Tyr His Gln	
408 413 418 423	
aga aca cac tca ggg gag aaa cct ttt gtt tgt aga gaa tgt ggg caa	1708
Arg Thr His Ser Gly Glu Lys Pro Phe Val Cys Arg Glu Cys Gly Gln	
424 429 434 439	



gga ttt att cag aag tca acc ctt gtg aaa cat cag atc aca cac tca	1756
Gly Phe Ile Gln Lys Ser Thr Leu Val Lys His Gln Ile Thr His Ser	
440 445 450 455	
gag gag aag cct ttt gtg tgc aag gac tgt gga cga ggc ttt atc caa	1804
Glu Glu Lys Pro Phe Val Cys Lys Asp Cys Gly Arg Gly Phe Ile Gln	
456 461 466 471	
aag tca acc ttc gct tta cac cag agg aca cac tca gag gag aag cct	1852
Lys Ser Thr Phe Ala Leu His Gln Arg Thr His Ser Glu Glu Lys Pro	
472 477 482 487	
tat gga tgt cgg gag tgt ggg cgt agg ttt cgg gat aag tcc tcc tat	1900
Tyr Gly Cys Arg Glu Cys Gly Arg Arg Phe Arg Asp Lys Ser Ser Tyr	
488 493 498 503	
aac aag cac ctg agg gca cac ttg ggt gag aaa cgt ttt ttc tgc agg	1948
Asn Lys His Leu Arg Ala His Leu Gly Glu Lys Arg Phe Phe Cys Arg	
504 509 514 519	
gat tgt ggg cga ggc ttt acc ttg aag cca aat ctc acc ata cat cag	1996
Asp Cys Gly Arg Gly Phe Thr Leu Lys Pro Asn Leu Thr Ile His Gln	
520 525 530 535	
agg aca cac tca gga gag aag ccc ttc atg tgc aag cag tgt gag aaa	2044
Arg Thr His Ser Gly Glu Lys Pro Phe Met Cys Lys Gln Cys Glu Lys	
536 541 546 551	
agt ttt agt ttg aag gca aat ctt ctt aga cat cag tgg aca cac tcg	2092
Ser Phe Ser Leu Lys Ala Asn Leu Leu Arg His Gln Trp Thr His Ser	
552 557 562 567	
ggg gaa agg cca ttt aat tgc aag gat tgc ggg cga ggc ttc atc cta	2140
Gly Glu Arg Pro Phe Asn Cys Lys Asp Cys Gly Arg Gly Phe Ile Leu	
568 573 578 583	
aaa tca act ctc ctc ttc cac cag aag aca cac tca ggg gag aag cct	2188
Lys Ser Thr Leu Leu Phe His Gln Lys Thr His Ser Gly Glu Lys Pro	
584 589 594 599	
ttc atc tgt agt gaa tgt ggg caa gga ttt atc tgg aag tca aat ctt	2236
Phe Ile Cys Ser Glu Cys Gly Gln Gly Phe Ile Trp Lys Ser Asn Leu	
600 605 610 615	
gtg aaa cac cag ctt gca cat tct ggc aag cag cct ttt gta tgc aag	2284
Val Lys His Gln Leu Ala His Ser Gly Lys Gln Pro Phe Val Cys Lys	
616 621 626 631	
gag tgt ggg cga ggc ttc aac tgg aag gga aat ctc ctc aca cac cag	2332
Glu Cys Gly Arg Gly Phe Asn Trp Lys Gly Asn Leu Leu Thr His Gln	
632 637 642 647	
agg aca cac tca ggg gag aag ccc ttc gtg tgt aat gtg tgt ggg caa	2380
Arg Thr His Ser Gly Glu Lys Pro Phe Val Cys Asn Val Cys Gly Gln	
648 653 658 663	
ggc ttc agc tgg aag aga agt ctc acc aga cac cac tgg cgg ata cac	2428

Gly Phe Ser Trp Lys Arg Ser Leu Thr Arg His His Trp Arg Ile His	
664 669 674 679	
tca aag gag aag cct ttt gtt tgc cag gag tgt aag cga ggc tat acc	2476
Ser Lys Glu Lys Pro Phe Val Cys Gln Glu Cys Lys Arg Gly Tyr Thr	
680 685 690 695	
agt aag tca gac ctc act gtg cat gaa aga ata cac aca gga gag agg	2524
Ser Lys Ser Asp Leu Thr Val His Glu Arg Ile His Thr Gly Glu Arg	
696 701 706 711	
cct tat gaa tgc caa gag tgt gga cga aag ttt agc aat aag tca tac	2572
Pro Tyr Glu Cys Gln Glu Cys Gly Arg Lys Phe Ser Asn Lys Ser Tyr	
712 717 722 727	
tac agt aag cac tta aag aga cac tta cgt gag aag cgt ttt tgt aca	2620
Tyr Ser Lys His Leu Lys Arg His Leu Arg Glu Lys Arg Phe Cys Thr	
728 733 738 743	
ggg agt gtg ggt gag gct tca tct tga agtta tatctcacca tccatcagag	2672
Gly Ser Val Gly Glu Ala Ser Ser *	
744 749	
gacacactca ggagagtaac tttgctttgt tacaagcttt agttgaggct gcataacttg	2732
ttcgtgaaga tataacagag gcagacagaa tccagagggc tacagagaac ctgaattcaa	2792
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tttactgttg aaacagtgtA agtattagga ggtgggacct ttgggaagtg attaagtcaa	3212
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aaaaaaaaa	3582

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 cgccgcttct tccgctttct cgtcaggctc ctgcaacccc aggcattgaac caagggttct 180  
 gaactactgg gcgggagcca acgtctcttc tttctccgc tctggcggag gctttgtcgc 240  
 tgccggctgg gccccagggt gtcccc atg gcg ggg ccg cgg gtg gag gtc 291  
 Met Ala Gly Pro Arg Val Glu Val  
 1 5  
 gat ggc agc atc atg gaa ggg ggc ggc cag atc ctg aga gtc tct acg 339  
 Asp Gly Ser Ile Met Glu Gly Gly Gly Gln Ile Leu Arg Val Ser Thr  
 9 14 19 24  
 gcc ttg agc tgt ctc cta ggc ctc ccc ttg cgg gtg cag aag atc cga 387  
 Ala Leu Ser Cys Leu Leu Gly Leu Pro Leu Arg Val Gln Lys Ile Arg  
 25 30 35 40  
 gcc ggc cgg agc acg cca ggc ctg agt att atg acc tga aggcctcaac 436  
 Ala Gly Arg Ser Thr Pro Gly Leu Ser Ile Met Thr \*  
 41 46 51  
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 tcgcgccgcg cgcgccgcc gctccgctg ttcggcgctc tgctttaggc ggtggggggc 180

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gggcgcgcgc gtaaaagcat agagacgggc attgagctct tgggctagag cgtcgccgag 240
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gtcagggaca aaagcctccg cctgctcccg cagccggggc tcatctgccg ccgccgccgc 360
gctgaggaga gttcgccgcc gtcgccgcc gtgaggatct gagagcc atg tgc gcc 416
Met Ser Ala
1
agc agc ctc ttg gag cag aga cca aaa ggt caa gga aac aaa gta caa 464
Ser Ser Leu Leu Glu Gln Arg Pro Lys Gly Gln Gly Asn Lys Val Gln
4 9 14 19
aat gga tct gta cat caa aag gat gga tta aac gat gat gat ttt gaa 512
Asn Gly Ser Val His Gln Lys Asp Gly Leu Asn Asp Asp Asp Phe Glu
20 25 30 35
cct tac ttg agt cca cag gca agg ccc aat aat gca tat act gcc atg 560
Pro Tyr Leu Ser Pro Gln Ala Arg Pro Asn Asn Ala Tyr Thr Ala Met
36 41 46 51
tca gat tcc tac tta ccc agt tac tac agt ccc tcc att ggc ttc tcc 608
Ser Asp Ser Tyr Leu Pro Ser Tyr Tyr Ser Pro Ser Ile Gly Phe Ser
52 57 62 67
tat tct ttg ggt gaa gct gct tgg tct acg ggg ggt gac aca gcc atg 656
Tyr Ser Leu Gly Glu Ala Ala Trp Ser Thr Gly Gly Asp Thr Ala Met
68 73 78 83
ccc tac tta act tct tat gga cag ctg agc aac gga gag ccc cac ttc 704
Pro Tyr Leu Thr Ser Tyr Gly Gln Leu Ser Asn Gly Glu Pro His Phe
84 89 94 99
cta cca gat gca atg ttt ggg caa cca gga gcc cta ggt agc act cca 752
Leu Pro Asp Ala Met Phe Gly Gln Pro Gly Ala Leu Gly Ser Thr Pro
100 105 110 115
ttt ctt ggt cag cat ggt ttt aat ttc ttt ccc agt ggg att gac ttc 800
Phe Leu Gly Gln His Gly Phe Asn Phe Phe Pro Ser Gly Ile Asp Phe
116 121 126 131
tca gca tgg gga aat aac agt tct cag gga cag tct act cag agc tct 848
Ser Ala Trp Gly Asn Asn Ser Ser Gln Gly Gln Ser Thr Gln Ser Ser
132 137 142 147
gga tat agt agc aat tat gct tat gca cct agc tcc tta ggt gga gcc 896
Gly Tyr Ser Ser Asn Tyr Ala Tyr Ala Pro Ser Ser Leu Gly Gly Ala
148 153 158 163
atg att gat gga cag tca gct ttt gcc aat gag acc ctc aat aag gct 944
Met Ile Asp Gly Gln Ser Ala Phe Ala Asn Glu Thr Leu Asn Lys Ala
164 169 174 179
cct ggc atg aat act ata gac caa ggg atg gca gca ctg aag ttg ggt 992
Pro Gly Met Asn Thr Ile Asp Gln Gly Met Ala Ala Leu Lys Leu Gly

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180	185	190	195	
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Ser Thr Glu Val Ala Ser Asn Val Pro Lys Val Val Gly Ser Ala Val				
196	201	206	211	
ggg agc ggg tcc att act agt aac atc gtg gct tcc aat agt ttg cct				1088
Gly Ser Gly Ser Ile Thr Ser Asn Ile Val Ala Ser Asn Ser Leu Pro				
212	217	222	227	
cca gcc acc att gct cct cca aaa cca gca tct tgg gct gat att gct				1136
Pro Ala Thr Ile Ala Pro Pro Lys Pro Ala Ser Trp Ala Asp Ile Ala				
228	233	238	243	
agc aag cct gca aaa cag caa cct aaa ctg aag acc aag aat ggc att				1184
Ser Lys Pro Ala Lys Gln Gln Pro Lys Leu Lys Thr Lys Asn Gly Ile				
244	249	254	259	
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Ala Gly Ser Ser Leu Pro Pro Pro Pro Ile Lys His Asn Met Asp Ile				
260	265	270	275	
gga act tgg gat aac aag ggt ccc gtt gca aaa gcc ccc tca cag gct				1280
Gly Thr Trp Asp Asn Lys Gly Pro Val Ala Lys Ala Pro Ser Gln Ala				
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ttg gtt cag aat ata ggt cag cca acc cag ggg tct cct cag cct gta				1328
Leu Val Gln Asn Ile Gly Gln Pro Thr Gln Gly Ser Pro Gln Pro Val				
292	297	302	307	
ggg cag cag gct aac aat agc cca cca gtg gct cag gca tca gta ggg				1376
Gly Gln Gln Ala Asn Asn Ser Pro Pro Val Ala Gln Ala Ser Val Gly				
308	313	318	323	
caa cag aca cag cca ttg cct cca cct cca cca cag cct gcc cag ctt				1424
Gln Gln Thr Gln Pro Leu Pro Pro Pro Pro Pro Gln Pro Ala Gln Leu				
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Ser Val Gln Gln Gln Ala Ala Gln Pro Thr Arg Trp Val Ala Pro Arg				
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aac cgt ggc agt ggg ttc ggt cat aat ggg gtg gat ggt aat gga gta				1520
Asn Arg Gly Ser Gly Phe Gly His Asn Gly Val Asp Gly Asn Gly Val				
356	361	366	371	
gga cag tct cag gct ggt tct gga tct act cct tca gaa ccc cac cca				1568
Gly Gln Ser Gln Ala Gly Ser Gly Ser Thr Pro Ser Glu Pro His Pro				
372	377	382	387	
gtg ttg gag aag ctt ccg tcc att aat aac tat aac ccc aaa gat ttt				1616
Val Leu Glu Lys Leu Arg Ser Ile Asn Asn Tyr Asn Pro Lys Asp Phe				
388	393	398	403	
gac tgg aat ctg aaa cat ggc cgg gtt ttc atc att aag agc tac tct				1664
Asp Trp Asn Leu Lys His Gly Arg Val Phe Ile Ile Lys Ser Tyr Ser				
404	409	414	419	

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Glu Asp Asp Ile His Arg Ser Ile Lys Tyr Asn Ile Trp Cys Ser Thr	
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gag cat ggt aac aag aga ctg gat gct gct tat cgt tcc atg aac ggg	1760
Glu His Gly Asn Lys Arg Leu Asp Ala Ala Tyr Arg Ser Met Asn Gly	
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Lys Gly Pro Val Tyr Leu Leu Phe Ser Val Asn Gly Ser Gly His Phe	
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Cys Gly Val Ala Glu Met Lys Ser Ala Val Asp Tyr Asn Thr Cys Ala	
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Ile Phe Val Lys Asp Val Pro Asn Ser Gln Leu Arg His Ile Arg Leu	
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	Met Glu Leu Ala Gln Glu Ala Arg Glu Leu Gly	
	1 5	
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Cys Trp Ala Val Glu Glu Met Gly Val Pro Val Ala Ala Arg Ala Pro		
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gaa tcg acg ctg cgc agg ctg tgt ctg ggc cag ggg gct gac atc tgg	205	
Glu Ser Thr Leu Arg Arg Leu Cys Leu Gly Gln Gly Ala Asp Ile Trp		
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gcc tac atc ttg cag cat gtg cac agt cag agg act gtc aag aag atc	253	
Ala Tyr Ile Leu Gln His Val His Ser Gln Arg Thr Val Lys Lys Ile		
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Arg Lys Leu Glu Leu Glu Ala Ala Val Thr Arg Leu Arg Ala Glu Ile		
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Gln Glu Leu Asp Gln Ser Leu Glu Leu Met Glu Arg Asp Thr Glu Ala		
92 97 102 107		
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124 129 134 139		
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Gln His Thr Leu Arg Asp Pro Met Gln Arg Leu Gln Asn Gln Leu Arg		
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cgc ctg cag gac atg gag agg aaa gcc aaa gta gat gtg acc ttt gga	589	
Arg Leu Gln Asp Met Glu Arg Lys Ala Lys Val Asp Val Thr Phe Gly		
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Ser Leu Thr Ser Ala Ala Leu Gly Leu Glu Pro Val Val Leu Arg Asp		
172 177 182 187		
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Val Arg Thr Ala Cys Thr Leu Arg Ala Gln Phe Leu Gln Asn Leu Leu		
188 193 198 203		
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Leu Pro Gln Ala Lys Arg Gly Ser Leu Pro Thr Pro His Asp Asp His		
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Thr Asn His Pro Pro Gly His Val Leu Ala Ala Leu Glu His Leu Ala	
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Ala Glu Arg Glu Ala Glu Val Arg Ser Leu Cys Ser Gly Asp Gly Leu	
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Gly Asp Thr Glu Ile Ser Arg Pro Gln Ala Pro Asp Gln Ser Asp Ser	
268 273 278 283	
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Ser Gln Thr Leu Pro Ser Met Val His Leu Ile Gln Glu Gly Trp Arg	
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Arg Cys Cys Leu Trp Thr Glu Leu Lys Ala Leu His Asp Gln Ser Gln	
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acc cag gaa cag gtc cgc ctg ctc atc aag gga aac tcg gcc agc aag	1309
Thr Gln Glu Gln Val Arg Leu Leu Ile Lys Gly Asn Ser Ala Ser Lys	
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Gly Thr Leu Leu Arg His Arg Pro Gly Glu Leu Lys Pro Leu Pro Thr				
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Val Leu Pro Ser Ile His Gln Leu His Pro Ala Ser Pro Arg Gly Ser				
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Ser Phe Ile Ala Leu Ser His Lys Leu Gly Leu Pro Pro Gly Lys Ala				
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Leu Leu Gln Asp Gln Arg Ser Leu Trp Cys Trp Asp Leu Leu His Met				
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Lys Thr Ser Leu Pro Pro Gly Leu Pro Thr Gln Glu Leu Leu Gln Ile				
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Gln Ala Ser Gln Glu Lys Gln Gln Lys Glu Asn Leu Gly Gln Ala Leu				
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aag agg ctg gag aag cta ctg aaa cag gca ctg gag cga atc cct gag				1837
Lys Arg Leu Glu Lys Leu Leu Lys Gln Ala Leu Glu Arg Ile Pro Glu				
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ctg cag ggg atc gtg ggg gac tgg tgg gag cag cca ggc cag gcc gcc				1885
Leu Gln Gly Ile Val Gly Asp Trp Trp Glu Gln Pro Gly Gln Ala Ala				
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Leu Ser Glu Glu Leu Cys Gln Gly Leu Ser Leu Pro Gln Trp Arg Leu				
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Arg Leu Tyr Ile Arg Ser Asn Pro Asp Leu Tyr Gly Pro Phe Trp Ile				
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Cys Ala Thr Leu Val Phe Ala Ile Ala Ile Ser Gly Asn Leu Ser Asn				
127	132	137	142	
ttc ttg atc cat ctg gga gag aag acg tac cat tat gtg ccc gaa ttc				661
Phe Leu Ile His Leu Gly Glu Lys Thr Tyr His Tyr Val Pro Glu Phe				
143	148	153	158	
cga aaa gtg tcc ata gca gct acc atc atc tat gcc tat gcc tgg ctg				709
Arg Lys Val Ser Ile Ala Ala Thr Ile Ile Tyr Ala Tyr Ala Trp Leu				
159	164	169	174	
gtt cct ctt gca ctc tgg ggt ttc ctc atg tgg aga aac agc aaa gtt				757
Val Pro Leu Ala Leu Trp Gly Phe Leu Met Trp Arg Asn Ser Lys Val				
175	180	185	190	
atg aac atc gtc tcc tat tca ttt ctg gag att gtg tgt gtc tat gga				805
Met Asn Ile Val Ser Tyr Ser Phe Leu Glu Ile Val Cys Val Tyr Gly				
191	196	201	206	
tat tcc ctc ttc att tat atc ccc acc gca ata ctg tgg att atc ccc				853
Tyr Ser Leu Phe Ile Tyr Ile Pro Thr Ala Ile Leu Trp Ile Ile Pro				
207	212	217	222	
cag aaa gct gtt cgt tgg att cta gtc atg att gcc ctg ggc atc tca				901
Gln Lys Ala Val Arg Trp Ile Leu Val Met Ile Ala Leu Gly Ile Ser				
223	228	233	238	
gga tct ctc ttg gca atg aca ttt tgg cca gct gtt cgt gag gat aac				949
Gly Ser Leu Leu Ala Met Thr Phe Trp Pro Ala Val Arg Glu Asp Asn				
239	244	249	254	
cga cgc gtt gca ttg gcc aca att gtg aca att gtg ttg ctc cat atg				997
Arg Arg Val Ala Leu Ala Thr Ile Val Thr Ile Val Leu Leu His Met				
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Leu Leu Ser Val Gly Cys Leu Ala Tyr Phe Phe Asp Ala Pro Glu Met				
271	276	281	286	
gac cat ctc cca aca act aca gct act cca aac caa aca gtt gct gca				1093
Asp His Leu Pro Thr Thr Thr Ala Thr Pro Asn Gln Thr Val Ala Ala				
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atccactgca ggaaagcaga atgagcagag ccagcagaac tgatggagtg gcacaaattc				1268

ccagtgtctg gatggtgcc aactggcgcc taatcacccg ttaacaagc agaaattaaa 1328  
 tgttgctcag cacatgtgtc tttcagctct tccttttcac ccatggatga tcattgcgag 1388  
 catgcgctga ttggactgaa atgccgggga ataggttagg catgctcagt gccgtccctt 1448  
 tgccaccaca gtcaaatgac atgcttcact gtggtacctt aatacctgaa atagaaccat 1508  
 ggaaaattct gatgtcctct ctctgaatta tgtacagact acctggggga tcctcttctc 1568  
 tccaaatgtt agccatcctg aagtagccga acagtagaaa ctttggtggg gattaaccgg 1628  
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 cgccgcgtgg gccaaacctg cgcccgtgga ggggcgcgca gagggcaccg ggcgcgggga 180  
 gcaggcggcg cagcaccagc attgtgttag tgccgggagg cactgtgtc agcaagctga 240  
 gagggaaact gaagcaag atg tcg ggc cgg agt ggg aag aag aaa atg tcc 291  
 Met Ser Gly Arg Ser Gly Lys Lys Lys Met Ser  
 1 5  
 aag ctg tcc cgt tca gct agg gca ggt gtc atc ttt cca gtg ggg agg 339  
 Lys Leu Ser Arg Ser Ala Arg Ala Gly Val Ile Phe Pro Val Gly Arg  
 12 17 22 27  
 ctg atg cgt tat ctg aag aaa ggg acg ttc aag tac cgg atc agc gtg 387  
 Leu Met Arg Tyr Leu Lys Lys Gly Thr Phe Lys Tyr Arg Ile Ser Val  
 28 33 38 43  
 ggc gcc cct gtc tac atg gcg gca gtc att gag tac ctg gca gcg gaa 435  
 Gly Ala Pro Val Tyr Met Ala Ala Val Ile Glu Tyr Leu Ala Ala Glu  
 44 49 54 59  
 att cta gaa ttg gcc ggc aat gcc gcg agg gac aac aag aag gcc cgg 483  
 Ile Leu Glu Leu Ala Gly Asn Ala Ala Arg Asp Asn Lys Lys Ala Arg  
 60 65 70 75

ata gcc ccg aga cac atc ttg ctg gca gtt gcc aat gac gag gag ctc	531
Ile Ala Pro Arg His Ile Leu Leu Ala Val Ala Asn Asp Glu Glu Leu	
76 81 86 91	
aac cag ctg cta aaa gga gtg acc atc gcc agt gga ggc gtc ctg ccc	579
Asn Gln Leu Leu Lys Gly Val Thr Ile Ala Ser Gly Gly Val Leu Pro	
92 97 102 107	
aga att cac ccc gaa ctg ctg gcc aaa aag cga ggg acc aaa ggc aag	627
Arg Ile His Pro Glu Leu Leu Ala Lys Lys Arg Gly Thr Lys Gly Lys	
108 113 118 123	
tcg gaa acg atc ctc tcc cca ccc cca gag aaa aga ggc agg aag gcc	675
Ser Glu Thr Ile Leu Ser Pro Pro Pro Glu Lys Arg Gly Arg Lys Ala	
124 129 134 139	
acg tca ggc aag aag ggg ggg aag aaa tcc aag gct gcc aaa cca cgg	723
Thr Ser Gly Lys Lys Gly Gly Lys Lys Ser Lys Ala Ala Lys Pro Arg	
140 145 150 155	
acg tcc aaa aag tcc aaa cca aag gac agc gat aaa gaa gga act tca	771
Thr Ser Lys Lys Ser Lys Pro Lys Asp Ser Asp Lys Glu Gly Thr Ser	
156 161 166 171	
aat tcc acc tct gaa gat ggg cca ggg gat gga ttc acc att ctg tct	819
Asn Ser Thr Ser Glu Asp Gly Pro Gly Asp Gly Phe Thr Ile Leu Ser	
172 177 182 187	
tct aag agc ctt gtt ctg gga cag aag ctg tcc tta acc cag agt gac	867
Ser Lys Ser Leu Val Leu Gly Gln Lys Leu Ser Leu Thr Gln Ser Asp	
188 193 198 203	
atc agc cat att ggc tcc atg aga gtg gag ggc att gtc cac cca acc	915
Ile Ser His Ile Gly Ser Met Arg Val Glu Gly Ile Val His Pro Thr	
204 209 214 219	
aca gcc gaa att gac ctc aaa gaa gat ata ggt aaa gcc ttg gaa aag	963
Thr Ala Glu Ile Asp Leu Lys Glu Asp Ile Gly Lys Ala Leu Glu Lys	
220 225 230 235	
gct ggg gga aaa gag ttc ttg gaa acg gta aag gag ctt cgc aaa tcc	1011
Ala Gly Gly Lys Glu Phe Leu Glu Thr Val Lys Glu Leu Arg Lys Ser	
236 241 246 251	
caa ggc cct ttg gaa gtc gcc gaa gcc gcc gtc agc caa tcc agt gga	1059
Gln Gly Pro Leu Glu Val Ala Glu Ala Ala Val Ser Gln Ser Ser Gly	
252 257 262 267	
ctc gca gcc aaa ttt gtc atc cac tgt cac atc cct cag tgg ggc tcc	1107
Leu Ala Ala Lys Phe Val Ile His Cys His Ile Pro Gln Trp Gly Ser	
268 273 278 283	
gac aaa tgt gaa gaa cag ctt gaa gag acc atc aaa aac tgc ctg tca	1155
Asp Lys Cys Glu Glu Gln Leu Glu Glu Thr Ile Lys Asn Cys Leu Ser	
284 289 294 299	

gcg gcg gag gac aag aag cta aag tcc gtc gcg ttc ccg cct ttc ccc	1203
Ala Ala Glu Asp Lys Lys Leu Lys Ser Val Ala Phe Pro Pro Phe Pro	
300 305 310 315	
agc ggc aga aac tgc ttt ccc aaa cag act gcg gcc cag gtg acc ctc	1251
Ser Gly Arg Asn Cys Phe Pro Lys Gln Thr Ala Ala Gln Val Thr Leu	
316 321 326 331	
aaa gcc atc tca gcc cac ttt gat gac tcg agc gcg tcc tcg ctg aag	1299
Lys Ala Ile Ser Ala His Phe Asp Asp Ser Ser Ala Ser Ser Leu Lys	
332 337 342 347	
aac gtg tac ttc ctg ctc ttc gac agc gag agc atc gcc atc tac gtg	1347
Asn Val Tyr Phe Leu Leu Phe Asp Ser Glu Ser Ile Gly Ile Tyr Val	
348 353 358 363	
cag gag atg gcc aag ctc gac gcc aag tag c cgccgcactt tccagcaggg	1398
Gln Glu Met Ala Lys Leu Asp Ala Lys *	
364 369	
atcggaggac gacccgagtc ccaagagtgg ggttttgctt tttaaaagga gagaggaggg	1458
gtgatggcag gggagtggag ggtggccggg caggtcctgc cggcgcaggg agccctctgc	1518
ccttcacact ctctccaaa agagcctcca tctgtaagga agcaggtctc cgcgaggggt	1578
ttctttccat gtgttttctt cctgttggtt tagaactttt ttaaaaaaac agacctcggt	1638
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cttaaaaaaa aaaaaaaa	1716

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attggtttct tttagggagc tacaaattta cgggttcact ggtgattgat cttttcatcc	180
agcaca atg gac aga agt cta agg aac gtc ctt gtg gtt tcc ttt ggg	228
Met Asp Arg Ser Leu Arg Asn Val Leu Val Val Ser Phe Gly	
1 5 10	
ttc ctg ctt ctc ttt aca gcc tat gga ggt ctg cag agc ctg cag agc	276
Phe Leu Leu Leu Phe Thr Ala Tyr Gly Gly Leu Gln Ser Leu Gln Ser	



15	20	25	30	
agc ctg tac agc gag gag ggc ctg ggt gtc aca gcg ctc agc acc ctc				324
Ser Leu Tyr Ser Glu Glu Gly Leu Gly Val Thr Ala Leu Ser Thr Leu				
31	36	41	46	
tat gga ggc atg ctc ctg tcc tcc atg ttc ctc cca ccg ctc ctc atc				372
Tyr Gly Gly Met Leu Leu Ser Ser Met Phe Leu Pro Pro Leu Leu Ile				
47	52	57	62	
gag agg ctg ggc tgc aag ggg acc atc atc ctc tcc atg tgt ggc tac				420
Glu Arg Leu Gly Cys Lys Gly Thr Ile Ile Leu Ser Met Cys Gly Tyr				
63	68	73	78	
gtg gcc ttc tcc gtg ggc aac ttc ttc gcc agc tgg tac act ttg atc				468
Val Ala Phe Ser Val Gly Asn Phe Phe Ala Ser Trp Tyr Thr Leu Ile				
79	84	89	94	
ccc acc tcc ata ctg ctg gga ctc ggg gcc gcc ccg ctg tgg tct gca				516
Pro Thr Ser Ile Leu Leu Gly Leu Gly Ala Ala Pro Leu Trp Ser Ala				
95	100	105	110	
cag tgc aca tac ctc acg atc acg gga aac aca cat gca gag aag gcg				564
Gln Cys Thr Tyr Leu Thr Ile Thr Gly Asn Thr His Ala Glu Lys Ala				
111	116	121	126	
gga aag cgt ggc aaa gac atg gtg aac cag tat ttt ggc atc ttc ttc				612
Gly Lys Arg Gly Lys Asp Met Val Asn Gln Tyr Phe Gly Ile Phe Phe				
127	132	137	142	
ctc ata ttc cag tca tcc ggt gtg tgg ggc aac ttg atc tca tcc ctg				660
Leu Ile Phe Gln Ser Ser Gly Val Trp Gly Asn Leu Ile Ser Ser Leu				
143	148	153	158	
gta ttt ggc cag act ccc agc caa gag acc ctt cca gaa gag cag ctc				708
Val Phe Gly Gln Thr Pro Ser Gln Glu Thr Leu Pro Glu Glu Gln Leu				
159	164	169	174	
acg tcc tgt ggg gcc agt gac tgc ctg atg gcc acc aca acc acc aac				756
Thr Ser Cys Gly Ala Ser Asp Cys Leu Met Ala Thr Thr Thr Thr Asn				
175	180	185	190	
agc acc cag agg ccc tcc cag cag ctg gtc tac acc ctc ctg ggc atc				804
Ser Thr Gln Arg Pro Ser Gln Gln Leu Val Tyr Thr Leu Leu Gly Ile				
191	196	201	206	
tac act ggt acg agc tcc atc ggc cca ggg cag ggt ccc tag caaagca				853
Tyr Thr Gly Thr Ser Ser Ile Gly Pro Gly Gln Gly Pro *				
207	212	217		
gagccaagcc tccttctctgg gctgacaaag actgtctctc ccaatgtaaa aagtaatctc				913
tcttc				918

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 <212> DNA  
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<400> 559

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1

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 Phe Trp Val Gly Thr Ala Pro Leu Val Ala Ala Gly Arg Arg Gly Arg  
 4 9 14 19

tgg ccg ccg cag cag ctg atg ctg agc gcg gcg ctg cgg acc ctg aag 151  
 Trp Pro Pro Gln Gln Leu Met Leu Ser Ala Ala Leu Arg Thr Leu Lys  
 20 25 30 35

cat gtt ctg tac tat tca aga cag tgc tta atg gtg tcc cgt aat ctt 199  
 His Val Leu Tyr Tyr Ser Arg Gln Cys Leu Met Val Ser Arg Asn Leu  
 36 41 46 51

ggc tca gtg gga tat gat cct aat gaa aaa act ttt gat aaa att ctt 247  
 Gly Ser Val Gly Tyr Asp Pro Asn Glu Lys Thr Phe Asp Lys Ile Leu  
 52 57 62 67

gtt gct aat aga gga gaa att gca tgt cgg gtt att aga act tgc aag 295  
 Val Ala Asn Arg Gly Glu Ile Ala Cys Arg Val Ile Arg Thr Cys Lys  
 68 73 78 83

aag atg ggc att aag aca gtt gcc atc cac agt gat gtt gat gct agt 343  
 Lys Met Gly Ile Lys Thr Val Ala Ile His Ser Asp Val Asp Ala Ser  
 84 89 94 99

tct gtt cat gtg aaa atg gcg gat gag gct gtc tgt gtt ggc cca gct 391  
 Ser Val His Val Lys Met Ala Asp Glu Ala Val Cys Val Gly Pro Ala  
 100 105 110 115

ccc acc agt aaa agc tac ctc aac atg gat gcc atc atg gaa gcc att 439  
 Pro Thr Ser Lys Ser Tyr Leu Asn Met Asp Ala Ile Met Glu Ala Ile  
 116 121 126 131

aag aaa acc agg gcc caa gct gta cat cca ggt tat gga ttc ctt tca 487  
 Lys Lys Thr Arg Ala Gln Ala Val His Pro Gly Tyr Gly Phe Leu Ser  
 132 137 142 147

gaa aac aaa gaa ttt gcc aga tgt ttg gca gca gaa gat gtc gtt ttc 535  
 Glu Asn Lys Glu Phe Ala Arg Cys Leu Ala Ala Glu Asp Val Val Phe  
 148 153 158 163

att gga cct gac aca cat gct att caa gcc atg ggc gac aag att gaa 583  
 Ile Gly Pro Asp Thr His Ala Ile Gln Ala Met Gly Asp Lys Ile Glu  
 164 169 174 179

agc aaa tta tta gct aag aaa gca gag gtt aat aca atc cct ggc ttt	631
Ser Lys Leu Leu Ala Lys Lys Ala Glu Val Asn Thr Ile Pro Gly Phe	
180 185 190 195	
gat gga gta gtc aag gat gca gaa gaa gct gtc aga att gca agg gaa	679
Asp Gly Val Val Lys Asp Ala Glu Glu Ala Val Arg Ile Ala Arg Glu	
196 201 206 211	
att ggc tac cct gtc atg atc aag gcc tca gca ggt ggt ggt ggg aaa	727
Ile Gly Tyr Pro Val Met Ile Lys Ala Ser Ala Gly Gly Gly Gly Lys	
212 217 222 227	
ggc atg cgc att gct tgg gat gat gaa gag acc agg gat ggt ttt aga	775
Gly Met Arg Ile Ala Trp Asp Asp Glu Glu Thr Arg Asp Gly Phe Arg	
228 233 238 243	
ttg tca tct caa gaa gct gct tct agt ttt ggc gat gat aga cta cta	823
Leu Ser Ser Gln Glu Ala Ala Ser Ser Phe Gly Asp Asp Arg Leu Leu	
244 249 254 259	
ata gaa aaa ttt att gat aat cct cgt cat ata gaa atc cag gtt cta	871
Ile Glu Lys Phe Ile Asp Asn Pro Arg His Ile Glu Ile Gln Val Leu	
260 265 270 275	
ggg gat aaa cat ggg aat gct tta tgg ctt aat gaa aga gag tgc tca	919
Gly Asp Lys His Gly Asn Ala Leu Trp Leu Asn Glu Arg Glu Cys Ser	
276 281 286 291	
att cag aga aga aat cag aag gtg gtg gag gaa gca cca agc att ttt	967
Ile Gln Arg Arg Asn Gln Lys Val Val Glu Glu Ala Pro Ser Ile Phe	
292 297 302 307	
ttg gat gcg gag act cga aga gcg atg gga gaa caa gct gta gct ctt	1015
Leu Asp Ala Glu Thr Arg Arg Ala Met Gly Glu Gln Ala Val Ala Leu	
308 313 318 323	
gcc aga gca gta aaa tat tcc tct gct ggg acc gtg gag ttc ctt gtg	1063
Ala Arg Ala Val Lys Tyr Ser Ser Ala Gly Thr Val Glu Phe Leu Val	
324 329 334 339	
gac tct aag aag aat ttt tat ttc ttg gaa atg aat aca aga ctc cag	1111
Asp Ser Lys Lys Asn Phe Tyr Phe Leu Glu Met Asn Thr Arg Leu Gln	
340 345 350 355	
gtt gag cat cct gtc aca gaa tgc att act ggc ctg gac cta gtc cag	1159
Val Glu His Pro Val Thr Glu Cys Ile Thr Gly Leu Asp Leu Val Gln	
356 361 366 371	
gaa atg atc cgt gtt gct aag ggc tac cct ctc agg cac aaa caa gct	1207
Glu Met Ile Arg Val Ala Lys Gly Tyr Pro Leu Arg His Lys Gln Ala	
372 377 382 387	
gat att cgc atc aac ggc tgg gca gtt gaa tgt cgg gtt tat gct gag	1255
Asp Ile Arg Ile Asn Gly Trp Ala Val Glu Cys Arg Val Tyr Ala Glu	
388 393 398 403	

gac ccc tac aag tct ttt ggt tta cca tct att ggg aga ttg tct cag	1303
Asp Pro Tyr Lys Ser Phe Gly Leu Pro Ser Ile Gly Arg Leu Ser Gln	
404 409 414 419	
tac caa gaa ccg tta cat cta cct ggt gtc cga gtg gac agt ggc atc	1351
Tyr Gln Glu Pro Leu His Leu Pro Gly Val Arg Val Asp Ser Gly Ile	
420 425 430 435	
caa cca gga agt gat att agc att tat tat gat cct atg att tca aaa	1399
Gln Pro Gly Ser Asp Ile Ser Ile Tyr Tyr Asp Pro Met Ile Ser Lys	
436 441 446 451	
cta atc aca tat ggc tct gat aga act gag gca ctg aag aga atg gca	1447
Leu Ile Thr Tyr Gly Ser Asp Arg Thr Glu Ala Leu Lys Arg Met Ala	
452 457 462 467	
gat gca ctg gat aac tat gtt att cga ggt gtt aca cat aat att gca	1495
Asp Ala Leu Asp Asn Tyr Val Ile Arg Gly Val Thr His Asn Ile Ala	
468 473 478 483	
tta ctt cga gag gtg ata atc aac tca cgc ttt gta aaa gga gac atc	1543
Leu Leu Arg Glu Val Ile Ile Asn Ser Arg Phe Val Lys Gly Asp Ile	
484 489 494 499	
agc act aaa ttt ctc tcc gat gtg tat cct gat ggc ttc aaa gga cac	1591
Ser Thr Lys Phe Leu Ser Asp Val Tyr Pro Asp Gly Phe Lys Gly His	
500 505 510 515	
atg cta acc aag agt gag aag aac cag tta ttg gca ata gca tca tca	1639
Met Leu Thr Lys Ser Glu Lys Asn Gln Leu Leu Ala Ile Ala Ser Ser	
516 521 526 531	
ttg ttt gtg gca ttc cag tta aga gca caa cat ttt caa gaa aat tca	1687
Leu Phe Val Ala Phe Gln Leu Arg Ala Gln His Phe Gln Glu Asn Ser	
532 537 542 547	
aga atg cct gtt att aaa cca gac ata gcc aac tgg gag ctc tca gta	1735
Arg Met Pro Val Ile Lys Pro Asp Ile Ala Asn Trp Glu Leu Ser Val	
548 553 558 563	
aaa ttg cat gat aaa gtt cat acc gta gta gca tca aac aat ggg tca	1783
Lys Leu His Asp Lys Val His Thr Val Val Ala Ser Asn Asn Gly Ser	
564 569 574 579	
gtg ttc tcg gtg gaa gtt gat ggg tcg aaa cta aat gtg acc agc acg	1831
Val Phe Ser Val Glu Val Asp Gly Ser Lys Leu Asn Val Thr Ser Thr	
580 585 590 595	
tgg aac ctg gct tcg ccc tta ttg tct gtc agc gtt gat ggc act cag	1879
Trp Asn Leu Ala Ser Pro Leu Leu Ser Val Ser Val Asp Gly Thr Gln	
596 601 606 611	
agg act gtc cag tgt ctt tct cga gaa gca ggt gga aac atg agc att	1927
Arg Thr Val Gln Cys Leu Ser Arg Glu Ala Gly Gly Asn Met Ser Ile	
612 617 622 627	
cag ttt ctt ggt aca gtg tac aag gtg aat atc tta acc aga ctt gcc	1975

Gln Phe Leu Gly Thr Val Tyr Lys Val Asn Ile Leu Thr Arg Leu Ala	
628 633 638 643	
gca gaa ttg aac aaa ttt atg ctg gaa aaa gtg act gag gac aca agc	2023
Ala Glu Leu Asn Lys Phe Met Leu Glu Lys Val Thr Glu Asp Thr Ser	
644 649 654 659	
agt gtt ctg cgt tcc ccg atg ccc gga gtg gtg gtg gcc gtc tct gtc	2071
Ser Val Leu Arg Ser Pro Met Pro Gly Val Val Val Ala Val Ser Val	
660 665 670 675	
aag cct gga gac gcg gta gca gaa ggt caa gaa att tgt gtg att gaa	2119
Lys Pro Gly Asp Ala Val Ala Glu Gly Gln Glu Ile Cys Val Ile Glu	
676 681 686 691	
gcc atg aaa atg cag aat agt atg aca gct ggg aaa act ggc acg gtg	2167
Ala Met Lys Met Gln Asn Ser Met Thr Ala Gly Lys Thr Gly Thr Val	
692 697 702 707	
aaa tct gtg cac tgt caa gct gga gac aca gtt gga gaa ggg gat ctg	2215
Lys Ser Val His Cys Gln Ala Gly Asp Thr Val Gly Glu Gly Asp Leu	
708 713 718 723	
ctc gtg gag ctg gaa tga aggatt tataaccttt cagtcacac ccaatttaat	2269
Leu Val Glu Leu Glu *	
724 729	
tagccatttg catgatgctt tcacacacaa ttgattcaag cattatacag gaacacccct	2329
gtgcagctac gtttacgtcg tcattttattc cacagagtca agaccaatat tctgccaaaa	2389
aatcaccaat ggaaattttc attgatataa atacttgtac atatgatttg tactttctgct	2449
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aa	2511

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aaatacaaac ctagcttgag tttagttatg tcocataaatg ttaactgatc cctgtgggtca	180
gtagggagac agctggcatc cgtttccaac cagccaagga tattcggtcg actgtactga	240

ctgaccactt tgctcaggcc gcaagtgtcc ctcagaaaag cctgaggact tattaaggtc	300
atggaagggtt gccttggcag gaactotttt ctaatcac      atg ttt ttg act tcc	353
Met Phe Leu Thr Ser	
1	
ctc tct agc cct aac cgg cag cca ttt gtt ctc ttt ggt aat cac tcc	401
Leu Ser Ser Pro Asn Arg Gln Pro Phe Val Leu Phe Gly Asn His Ser	
6 11 16 21	
aca cga gaa aac ctg aat gct ggc aac ttt aac ttc cct tct gaa gga	449
Thr Arg Glu Asn Leu Asn Ala Gly Asn Phe Asn Phe Pro Ser Glu Gly	
22 27 32 37	
cat ctg gta cga agc act ggt ccc ggc ggg agc ttt gcc aag cac atg	497
His Leu Val Arg Ser Thr Gly Pro Gly Gly Ser Phe Ala Lys His Met	
38 43 48 53	
gta gcc cag tgt gtc tca cca aag gga cct ctt gct tgt tcg aga aca	545
Val Ala Gln Cys Val Ser Pro Lys Gly Pro Leu Ala Cys Ser Arg Thr	
54 59 64 69	
tac ttt ttt gga gct act cat gtt cct tac ttg ggt ggt gac agc aag	593
Tyr Phe Phe Gly Ala Thr His Val Pro Tyr Leu Gly Gly Asp Ser Lys	
70 75 80 85	
ctg ccc aag aaa act gaa caa att agg cta ttg tcc cag ata tat gct	641
Leu Pro Lys Lys Thr Glu Gln Ile Arg Leu Leu Ser Gln Ile Tyr Ala	
86 91 96 101	
gct gtt att gag gct gtt ttg gct ggc att gca tgt tat gct aaa act	689
Ala Val Ile Glu Ala Val Leu Ala Gly Ile Ala Cys Tyr Ala Lys Thr	
102 107 112 117	
tcc agt cta aca aag gcc aag gag gta gca gag caa act ctg gga tct	737
Ser Ser Leu Thr Lys Ala Lys Glu Val Ala Glu Gln Thr Leu Gly Ser	
118 123 128 133	
ggg tta gat tcc ttt gag ttg att ccg ttt aag gca gcc ctg cgc tcc	785
Gly Leu Asp Ser Phe Glu Leu Ile Pro Phe Lys Ala Ala Leu Arg Ser	
134 139 144 149	
aag atg act ttt cat ata cat gct gtg aat aat cag gga aga att gta	833
Lys Met Thr Phe His Ile His Ala Val Asn Asn Gln Gly Arg Ile Val	
150 155 160 165	
ccg ctg gac agt gaa gat agc tta tcc ttt gtg aag acg gct tgt atg	881
Pro Leu Asp Ser Glu Asp Ser Leu Ser Phe Val Lys Thr Ala Cys Met	
166 171 176 181	
gcc gtc tat gac att cct gac tta ctg gga ggc aat ggt tgt tta gga	929
Ala Val Tyr Asp Ile Pro Asp Leu Leu Gly Gly Asn Gly Cys Leu Gly	
182 187 192 197	
tct gtg gtt ttc tct gaa tca ttt ttg act tct cag atc tta gtt aaa	977
Ser Val Val Phe Ser Glu Ser Phe Leu Thr Ser Gln Ile Leu Val Lys	

198	203	208	213	
gaa aag gat ggc act gtt acc aca gaa acc agc tcc gta gtc ctg act				1025
Glu Lys Asp Gly Thr Val Thr Thr Glu Thr Ser Ser Val Val Leu Thr				
214	219	224	229	
gct gct gta ccc aga ttc tgc tcc tgg ctg gtg gaa gat aat gaa gta				1073
Ala Ala Val Pro Arg Phe Cys Ser Trp Leu Val Glu Asp Asn Glu Val				
230	235	240	245	
aaa ttg tct gag aaa acc cag caa gca gtg agg ggg gat gag tct ttc				1121
Lys Leu Ser Glu Lys Thr Gln Gln Ala Val Arg Gly Asp Glu Ser Phe				
246	251	256	261	
ctg ggc act tat cta aca gga gga gaa gga gca tat ctt tat tcc agc				1169
Leu Gly Thr Tyr Leu Thr Gly Gly Glu Gly Ala Tyr Leu Tyr Ser Ser				
262	267	272	277	
aat cta cag tcc tgg cct gag gaa ggg aat gtt cat ttc ttc tct agt				1217
Asn Leu Gln Ser Trp Pro Glu Glu Gly Asn Val His Phe Phe Ser Ser				
278	283	288	293	
ggc ctt ctg ttt tct cac tgt cgt cat gga agt atc atc att tcc aag				1265
Gly Leu Leu Phe Ser His Cys Arg His Gly Ser Ile Ile Ile Ser Lys				
294	299	304	309	
gat cac atg aat tcc att tcc ttc tat gat ggg gat tcc acc agt act				1313
Asp His Met Asn Ser Ile Ser Phe Tyr Asp Gly Asp Ser Thr Ser Thr				
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gtt gct gct ctt ctc ata gac ttc aaa agc tca ttg ctt cct cac ctc				1361
Val Ala Ala Leu Leu Ile Asp Phe Lys Ser Ser Leu Leu Pro His Leu				
326	331	336	341	
cca gtt cat ttc cat gga tca agc aat ttt ctg atg att gcc ctt ttc				1409
Pro Val His Phe His Gly Ser Ser Asn Phe Leu Met Ile Ala Leu Phe				
342	347	352	357	
ccc aaa tcg aag ata tac caa gca ttt tac tca gag gtc ttc tcc ctc				1457
Pro Lys Ser Lys Ile Tyr Gln Ala Phe Tyr Ser Glu Val Phe Ser Leu				
358	363	368	373	
tgg aaa cag cag gat aac tca ggg atc tct tta aaa gtg atc cag gaa				1505
Trp Lys Gln Gln Asp Asn Ser Gly Ile Ser Leu Lys Val Ile Gln Glu				
374	379	384	389	
gat gga tta tct gtg gaa caa aag aga ttg cac tcc agt gca cag aag				1553
Asp Gly Leu Ser Val Glu Gln Lys Arg Leu His Ser Ser Ala Gln Lys				
390	395	400	405	
ctc ttc agt gcc ctg agc cag cct gct ggg gag aaa cgg agt tcc cta				1601
Leu Phe Ser Ala Leu Ser Gln Pro Ala Gly Glu Lys Arg Ser Ser Leu				
406	411	416	421	
aag tta ctc tca gcc aaa ctc cca gag ctg gac tgg ttt ctc cag cat				1649
Lys Leu Leu Ser Ala Lys Leu Pro Glu Leu Asp Trp Phe Leu Gln His				
422	427	432	437	

ttc gcc atc agc agc att agc cag gag cct gtg atg cgg acc cat ctt	1697
Phe Ala Ile Ser Ser Ile Ser Gln Glu Pro Val Met Arg Thr His Leu	
438 443 448 453	
cct gtg ctg ctg cag caa gct gaa atc aac act act cac aga ata gaa	1745
Pro Val Leu Leu Gln Gln Ala Glu Ile Asn Thr Thr His Arg Ile Glu	
454 459 464 469	
agt gac aag gta att atc agc att gta acc ggc ctc cca ggc tgt cac	1793
Ser Asp Lys Val Ile Ile Ser Ile Val Thr Gly Leu Pro Gly Cys His	
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Ala Ser Glu Leu Cys Ala Phe Leu Val Thr Leu His Lys Glu Cys Gly	
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Arg Trp Met Val Tyr Arg Gln Ile Met Asp Ser Ser Glu Cys Phe His	
502 507 512 517	
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Ala Ala His Phe Gln Arg Tyr Leu Ser Ser Ala Leu Glu Ala Gln Gln	
518 523 528 533	
aac cgc tct gcg cgc cag tca gcc tac atc cgc aag aag acc aga ctg	1985
Asn Arg Ser Ala Arg Gln Ser Ala Tyr Ile Arg Lys Lys Thr Arg Leu	
534 539 544 549	
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Leu Val Val Leu Gln Gly Tyr Thr Asp Val Ile Asp Val Val Gln Ala	
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Leu Gln Thr His Pro Asp Ser Asn Val Lys Ala Ser Phe Thr Ile Gly	
566 571 576 581	
gcc atc aca gca tgt gtg gag ccc atg agc tgc tac atg gag cac aga	2129
Ala Ile Thr Ala Cys Val Glu Pro Met Ser Cys Tyr Met Glu His Arg	
582 587 592 597	
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Phe Leu Phe Pro Lys Cys Leu Asp Gln Cys Ser Gln Gly Leu Val Ser	
598 603 608 613	
aac gtg gta ttc acc agt cac acc acg gag cag cgg cac cct ctc ctt	2225
Asn Val Val Phe Thr Ser His Thr Thr Glu Gln Arg His Pro Leu Leu	
614 619 624 629	
gtt cag ctg cag agc ctc atc agg gct gcc aat cct gct gca gcc ttc	2273
Val Gln Leu Gln Ser Leu Ile Arg Ala Ala Asn Pro Ala Ala Ala Phe	
630 635 640 645	
att ctt gca gaa aat ggg att gtc acc agg aat gaa gac att gag ctg	2321
Ile Leu Ala Glu Asn Gly Ile Val Thr Arg Asn Glu Asp Ile Glu Leu	
646 651 656 661	



att ctc tca gaa aac agt ttt tca agt cct gag atg cta cga tct cga	2369
Ile Leu Ser Glu Asn Ser Phe Ser Ser Pro Glu Met Leu Arg Ser Arg	
662 667 672 677	
tat tta atg tat cct ggc tgg tat gaa ggt aaa ttg aat gct gga tca	2417
Tyr Leu Met Tyr Pro Gly Trp Tyr Glu Gly Lys Leu Asn Ala Gly Ser	
678 683 688 693	
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Val Tyr Pro Leu Met Val Gln Ile Cys Val Trp Phe Gly Arg Pro Leu	
694 699 704 709	
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Glu Lys Thr Arg Phe Val Ala Lys Cys Lys Ala Ile <sup>3</sup> Gln Ser Ser Ile	
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Lys Pro Ser Pro Phe Ser Gly Asn Ile Tyr His Ile Leu Gly Lys Val	
726 731 736 741	
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Lys Phe Ser Asp Ser Glu Arg Thr Met Glu Val Cys Tyr Asn Thr Leu	
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Ala Asn Ser Leu Ser Ile Met Pro Val Leu Glu Gly Pro Thr Pro Pro	
758 763 768 773	
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Pro Asp Ser Lys Ser Val Ser Gln Asp Ser Ser Gly Gln Gln Glu Cys	
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Tyr Leu Val Phe Ile Gly Cys Ser Leu Lys Glu Asp Ser Ile Lys Asp	
790 795 800 805	
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Trp Leu Arg Gln Ser Ala Lys Gln Lys Pro Gln Arg Lys Ala Leu Lys	
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acc agg ggg atg ctg acg caa cag gag atc agg agc atc cac gta aaa	2849
Thr Arg Gly Met Leu Thr Gln Gln Glu Ile Arg Ser Ile His Val Lys	
822 827 832 837	
cgc cac ttg gaa ccc cta cct gca ggc tac ttt tat aat ggc acc caa	2897
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Phe Val Asn Phe Phe Gly Asp Lys Thr Asp Phe His Pro Leu Met Asp	
854 859 864 869	
cag ttc atg aat gac tac gtg gaa gaa gcc aac cgg gaa att gag aag	2993
Gln Phe Met Asn Asp Tyr Val Glu Glu Ala Asn Arg Glu Ile Glu Lys	
870 875 880 885	
tat aac cag gag ctg gaa cag cag gag tat cat gac ctc ttt gag ctg	3041

Tyr Asn Gln Glu Leu Glu Gln Gln Glu Tyr His Asp Leu Phe Glu Leu  
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aag ccc tag aggaagg ctgggcccgt acgtcctgca gaatgtccac cttggagatg 3097  
 Lys Pro \*  
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 a 4478

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                        Met Asp His Lys Ser Pro Gly Asn Lys Gly
                          1                5

tca ttg gtt tat gca gga att aaa tca att gta aag tca tcg ttg gga      159
Ser Leu Val Tyr Ala Gly Ile Lys Ser Ile Val Lys Ser Ser Leu Gly
  11                16                21                26

atg gtg gaa agc agc aga cat aat tgg agt ggg ttg gat aag caa agt      207
Met Val Glu Ser Ser Arg His Asn Trp Ser Gly Leu Asp Lys Gln Ser
  27                32                37                42

gat att caa aat tta aat gaa gag aga atc tta gct tta cag ctt tgt      255
Asp Ile Gln Asn Leu Asn Glu Glu Arg Ile Leu Ala Leu Gln Leu Cys
  43                48                53                58

ggg tgg ata aag aaa gga acg gat gta gac gtg ggg cca ttt ttg aac      303
Gly Trp Ile Lys Lys Gly Thr Asp Val Asp Val Gly Pro Phe Leu Asn
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tcc ctt gta caa gaa ggg gaa tgg gaa aga gct gct gct gtg gca ttg      351
Ser Leu Val Gln Glu Gly Glu Trp Glu Arg Ala Ala Ala Val Ala Leu
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ttc aac ttg gat att cgc cga gca atc caa atc ctg aat gaa ggg gca      399
Phe Asn Leu Asp Ile Arg Arg Ala Ile Gln Ile Leu Asn Glu Gly Ala
  91                96                101                106

tct tct gaa aaa gga gat ctg aat ctc aat gtg gta gca atg gct tta      447
Ser Ser Glu Lys Gly Asp Leu Asn Leu Asn Val Val Ala Met Ala Leu
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tcg ggt tat acg gat gag aag aac tcc ctt tgg aga gaa atg tgt agc      495
Ser Gly Tyr Thr Asp Glu Lys Asn Ser Leu Trp Arg Glu Met Cys Ser
  123                128                133                138

aca ctg cga tta cag cta aat aac ccg tat ttg/tgt gtc atg ttt gca      543
Thr Leu Arg Leu Gln Leu Asn Pro Tyr Leu Cys Val Met Phe Ala
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Phe Leu Thr Ser Glu Thr Gly Ser Tyr Asp Gly Val Leu Tyr Glu Asn	
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Lys Val Ala Val Arg Asp Arg Val Ala Phe Ala Cys Lys Phe Leu Ser	
171 176 181 186	
gat act cag tta aat aga tac atc gaa aag ttg acc aat gaa atg aaa	687
Asp Thr Gln Leu Asn Arg Tyr Ile Glu Lys Leu Thr Asn Glu Met Lys	
187 192 197 202	
gag gct gga aat ttg gaa gga att ttg ctt aca ggc ctt act aaa gat	735
Glu Ala Gly Asn Leu Glu Gly Ile Leu Leu Thr Gly Leu Thr Lys Asp	
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Gly Val Asp Leu Met Glu Ser Tyr Val Asp Arg Thr Gly Asp Val Gln	
219 224 229 234	
aca gca agt tac tgt atg tta cag ggt tca cct tta gat gtt ctt aaa	831
Thr Ala Ser Tyr Cys Met Leu Gln Gly Ser Pro Leu Asp Val Leu Lys	
235 240 245 250	
gat gaa agg gtt cag tac tgg att gag aat tat aga aat tta tta gat	879
Asp Glu Arg Val Gln Tyr Trp Ile Glu Asn Tyr Arg Asn Leu Leu Asp	
251 256 261 266	
gcc tgg agg ttt tgg cat aaa cga gct gaa ttt gat att cac agg agt	927
Ala Trp Arg Phe Trp His Lys Arg Ala Glu Phe Asp Ile His Arg Ser	
267 272 277 282	
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Lys Leu Asp Pro Ser Ser Lys Pro Leu Ala Gln Val Phe Val Ser Cys	
283 288 293 298	
aat ttc tgt ggc aag tca atc tcc tac agc tgt tca gct gtg cct cat	1023
Asn Phe Cys Gly Lys Ser Ile Ser Tyr Ser Cys Ser Ala Val Pro His	
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cag ggc aga ggt ttt agt cag tat ggt gtg agt ggc tca cca acg aaa	1071
Gln Gly Arg Gly Phe Ser Gln Tyr Gly Val Ser Gly Ser Pro Thr Lys	
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Ser Lys Val Thr Ser Cys Pro Gly Cys Arg Lys Pro Leu Pro Arg Cys	
331 336 341 346	
gcg ctt tgt ctc att aat atg gga aca cca gtt tct agc tgt cct gga	1167
Ala Leu Cys Leu Ile Asn Met Gly Thr Pro Val Ser Ser Cys Pro Gly	
347 352 357 362	
gga acc aaa tca gat gaa aaa gtg gac ttg agc aag gac aaa aaa tta	1215
Gly Thr Lys Ser Asp Glu Lys Val Asp Leu Ser Lys Asp Lys Lys Leu	
363 368 373 378	

gcc caa ttt aac aac tgg ttt aca tgg tgt cat aat tgc agg cac ggt 1263  
Ala Gln Phe Asn Asn Trp Phe Thr Trp Cys His Asn Cys Arg His Gly  
379 384 389 394

gga cat gct gga cat atg ctt agt tgg ttc agg gac cat gca gag tgc 1311  
Gly His Ala Gly His Met Leu Ser Trp Phe Arg Asp His Ala Glu Cys  
395 400 405 410

cct gtg tct gca tgc acg tgt aaa tgt atg cag ttg gat aca acg ggg 1359  
Pro Val Ser Ala Cys Thr Cys Lys Cys Met Gln Leu Asp Thr Thr Gly  
411 416 421 426

aat ctg gta cct gca gag act gtc cag cca taa aatggttac caccttaaga 1410  
Asn Leu Val Pro Ala Glu Thr Val Gln Pro \*  
427 432 437

gaacccttca agtgtggagc tttctagtag gtgtccttca tagctcagaa acatacctca 1470

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actccagaat tggccgctgg cggtatc atg gcg acc cgg aac ccc cct ccc 171  
Met Ala Thr Arg Asn Pro Pro Pro  
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caa gac tat gaa agt gat gac gac tct tat gaa gtg ttg gat tta act 219  
Gln Asp Tyr Glu Ser Asp Asp Asp Ser Tyr Glu Val Leu Asp Leu Thr  
9 14 19 24

gag tat gca aga aga cac cag tgg tgg aat cga gtg ttt ggc cac agt 267  
Glu Tyr Ala Arg Arg His Gln Trp Trp Asn Arg Val Phe Gly His Ser  
25 30 35 40

tog gga cct atg gta gaa aaa tac tca gta gct acc cag att gta atg 315  
Ser Gly Pro Met Val Glu Lys Tyr Ser Val Ala Thr Gln Ile Val Met  
41 46 51 56

ggg ggc gtt act ggc tgg tgt gca gga ttt ctg ttc cag aaa gtt gga 363  
Gly Gly Val Thr Gly Trp Cys Ala Gly Phe Leu Phe Gln Lys Val Gly

57	62	67	72	
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Lys Leu Ala Ala Thr Ala Val Gly Gly Gly Phe Leu Leu Leu Gln Ile				
73	78	83	88	
gct agt cat agt ggc tat gtg cag att gac tgg aag aga gtt gaa aaa				459
Ala Ser His Ser Gly Tyr Val Gln Ile Asp Trp Lys Arg Val Glu Lys				
89	94	99	104	
gat gta aat aaa gca aaa aga cag att aag aaa cga gcg aac aaa gca				507
Asp Val Asn Lys Ala Lys Arg Gln Ile Lys Lys Arg Ala Asn Lys Ala				
105	110	115	120	
gca cct gaa atc aac aat tta att gaa gaa gca aca gaa ttt atc aag				555
Ala Pro Glu Ile Asn Asn Leu Ile Glu Glu Ala Thr Glu Phe Ile Lys				
121	126	131	136	
cag aac att gtg ata tcc agt gga ttt gtg gga ggc ttt ttg ctc gga				603
Gln Asn Ile Val Ile Ser Ser Gly Phe Val Gly Gly Phe Leu Leu Gly				
137	142	147	152	
ctt gca tct taa gga catgaatatt ctcccataac ggattcaact atgagaagag				658
Leu Ala Ser *				
153				
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Leu Val Pro Ser Ser Asp Pro Leu Val Gln Cys Gly Gly Ile His Lys		
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Gly Ala Ala Ala Gly Ser Gly Leu Thr Leu Pro Ser Leu Pro Ser Ala		
29 34 39 44		
cgc ttc tca gcc ggg ccg ccg acc caa agg agc cgt ccg act atg tct		193
Arg Phe Ser Ala Gly Pro Pro Thr Gln Arg Ser Arg Pro Thr Met Ser		
45 50 55 60		
aac atg gag aaa cac ctg ttc aac ctg aag ttc gcg gcc aaa gaa ctg		241
Asn Met Glu Lys His Leu Phe Asn Leu Lys Phe Ala Ala Lys Glu Leu		
61 66 71 76		
agt agg agt gcc aaa aaa tgc gat aag gag gaa aag gcc gaa aag gcc		289
Ser Arg Ser Ala Lys Lys Cys Asp Lys Glu Glu Lys Ala Glu Lys Ala		
77 82 87 92		
aaa att aaa aag gcc att cag aag ggc aac atg gaa gtt gcg agg ata		337
Lys Ile Lys Lys Ala Ile Gln Lys Gly Asn Met Glu Val Ala Arg Ile		
93 98 103 108		
cac gcc gaa aat gcc atc cgc cag aag aac cag gcg gtg aat ttc ttg		385
His Ala Glu Asn Ala Ile Arg Gln Lys Asn Gln Ala Val Asn Phe Leu		
109 114 119 124		
aga atg agt gcg cga gtc gat gca gtg gct gcc agg gtc cag acg gcg		433
Arg Met Ser Ala Arg Val Asp Ala Val Ala Arg Val Gln Thr Ala		
125 130 135 140		
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Val Thr Met Gly Lys Val Thr Lys Ser Met Ala Gly Val Val Lys Ser		
141 146 151 156		
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Met Asp Ala Thr Leu Lys Thr Met Asn Leu Glu Lys Ile Ser Ala Leu		
157 162 167 172		
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Met Asp Lys Phe Glu His Gln Phe Glu Thr Leu Asp Val Gln Thr Gln		
173 178 183 188		
caa atg gaa gac acg atg agc agc acg acg acg ctc acc act ccc cag		625
Gln Met Glu Asp Thr Met Ser Ser Thr Thr Thr Leu Thr Thr Pro Gln		
189 194 199 204		
aac caa gtg gat atg ctg ctc cag gaa atg gca gat gag gcg ggc ctc		673
Asn Gln Val Asp Met Leu Leu Gln Glu Met Ala Asp Glu Ala Gly Leu		
205 210 215 220		
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Ser	Val	Ala	Ser	Ala	Glu	Gln	Asp	Glu	Leu	Ser	Gln	Arg	Leu	Ala	Arg	
237					242					247					252	
ctt	cgg	gat	caa	gtg	tga	cggcag	aacccgctct	gaggtttcct	ggccatagcc							823
Leu	Arg	Asp	Gln	Val	*											
253					258											
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Lys Arg Gln Ala His Leu Cys Val Leu Ala Ser Asn Cys Asp Glu Pro	
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Thr Met Thr Ala Ala Ile Lys Asp Leu Gln Val Arg Ala Cys Pro Phe	
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Asp Thr Lys Thr Leu Lys Met Trp Phe Leu Glu Glu Ser Asn Glu Thr	
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Lys Met Asn Ile Asp Ser Ile Phe Ile Val Leu Glu Ala Gly Ile Gly	
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Gly Lys Asn Trp Ser Ser Leu Ile Asn Leu His Cys Gln Leu Glu Leu	
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Glu Pro Leu Glu Ile Asp Gln Thr Glu Asp Phe Arg Pro Trp Asn Leu	
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Gly Ile Lys Met Lys Lys Lys Ala Lys Met Ala Ile Val Glu Ser Asp	
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Pro Glu Glu Glu Asn Tyr Lys Val Pro Glu Tyr Lys Thr Val Ile Ser	
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1259					1264					1269					1274	
gaa	gtc	ata	aga	cac	tat	tca	aaa	cag	gcc	att	aag	cag	atg	tat	gta	3952
Glu	Val	Ile	Arg	His	Tyr	Ser	Lys	Gln	Ala	Ile	Lys	Gln	Met	Tyr	Val	
1275					1280					1285					1290	
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Leu	Ile	Leu	Gly	Leu	Asp	Val	Leu	Gly	Asn	Pro	Phe	Gly	Leu	Ile	Arg	
1291					1296					1301					1306	
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Glu	Phe	Ser	Glu	Gly	Val	Glu	Ala	Phe	Phe	Tyr	Glu	Pro	Tyr	Gln	Gly	
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gcc																



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aaa atc acc ggt gct atg gct aag ggg gta gca gct atg acc atg gat				4192
Lys Ile Thr Gly Ala Met Ala Lys Gly Val Ala Ala Met Thr Met Asp				
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gaa gac tac caa cag aag aga aga gaa gcc atg aat aag caa cca gct				4240
Glu Asp Tyr Gln Gln Lys Arg Arg Glu Ala Met Asn Lys Gln Pro Ala				
1371	1376	1381	1386	
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Gly Phe Arg Glu Gly Ile Thr Arg Gly Gly Lys Gly Leu Val Ser Gly				
1387	1392	1397	1402	
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Phe Val Ser Gly Ile Thr Gly Ile Val Thr Lys Pro Ile Lys Gly Ala				
1403	1408	1413	1418	
caa aaa gga gga gca gct ggt ttc ttt aaa ggt gtt ggg aaa ggt tta				4384
Gln Lys Gly Gly Ala Ala Gly Phe Phe Lys Gly Val Gly Lys Gly Leu				
1419	1424	1429	1434	
gta gga gcg gta gca agg cca act gga ggc atc ata gac atg gct agc				4432
Val Gly Ala Val Ala Arg Pro Thr Gly Gly Ile Ile Asp Met Ala Ser				
1435	1440	1445	1450	
agt aca ttt cag ggg ata aaa aga gct aca gag act tct gaa gtg gag				4480
Ser Thr Phe Gln Gly Ile Lys Arg Ala Thr Glu Thr Ser Glu Val Glu				
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agt ctg cga cct cct cgg ttc ttc aat gaa gat gga gtt atc aga ccg				4528
Ser Leu Arg Pro Pro Arg Phe Phe Asn Glu Asp Gly Val Ile Arg Pro				
1467	1472	1477	1482	
tac agg ttg agg gat ggg act gga aat caa atg tta cag aaa att caa				4576
Tyr Arg Leu Arg Asp Gly Thr Gly Asn Gln Met Leu Gln Lys Ile Gln				
1483	1488	1493	1498	
ttc tac agg gag tgg att atg act cac agt agc agt agt gat gat gat				4624
Phe Tyr Arg Glu Trp Ile Met Thr His Ser Ser Ser Ser Asp Asp Asp				
1499	1504	1509	1514	
gat gat gat gat gat gat gat gag tca gat cta aac cat taa aattcat				4673
Asp Asp Asp Asp Asp Asp Asp Glu Ser Asp Leu Asn His *				
1515	1520	1525		
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gccccatatgt ccatttatag ggaggtaaaaa cacattttct tttaaaatgt tttcctacac				4793
attttcataa agcaaaataa ttgtattatt taagcacaga aaaaaatgta ttttacatcc				4853
aaagtaggga gggcatccaa catattatag jatttgctttt atatatttta tagctttgta				4913
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5078

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Met Ala Gly  
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Val Ala Thr Val His Leu Val Ile Cys Pro Tyr Thr Lys Val Glu Glu  
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Ser Phe Asn Leu Gln Ala Thr His Asp Leu Leu Tyr His Trp Gln Asp  
36 41 46 51  
ctg gag cag tac gac cat ctt gag ttc ccc gga gtc gtc ccc agg acg 486  
Leu Glu Gln Tyr Asp His Leu Glu Phe Pro Gly Val Val Pro Arg Thr  
52 57 62 67  
ttc ctc ggg cca gtg gtg atc gca gtg ttc tcc agc ccc gcg gtt tac 534  
Phe Leu Gly Pro Val Val Ile Ala Val Phe Ser Ser Pro Ala Val Tyr  
68 73 78 83  
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Val Leu Ser Leu Leu Glu Met Ser Lys Phe Tyr Ser Gln Leu Ile Val  
84 89 94 99

aga gga gtg ctt gga ctc ggc gtg att ttt gga ctc tgg acg tta caa	630
Arg Gly Val Leu Gly Leu Gly Val Ile Phe Gly Leu Trp Thr Leu Gln	
100 105 110 115	
aag gaa gtg aga cgg cac ttc ggg gcc atg gtg gcc acc atg ttc tgc	678
Lys Glu Val Arg Arg His Phe Gly Ala Met Val Ala Thr Met Phe Cys	
116 121 126 131	
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Trp Val Thr Ala Met Gln Phe His Leu Met Phe Tyr Cys Thr Arg Thr	
132 137 142 147	
ctg ccc aat gtg ctg gcc ctg cct gta gtc ctg ctg gcc ctc gcg gcc	774
Leu Pro Asn Val Leu Ala Leu Pro Val Val Leu Leu Ala Leu Ala Ala	
148 153 158 163	
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Trp Leu Arg His Glu Trp Ala Arg Phe Ile Trp Leu Ser Ala Phe Ala	
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Ile Ile Val Phe Arg Val Glu Leu Cys Leu Phe Leu Gly Leu Leu Leu	
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ctg ctg gcc ttg ggc aac cga aag gtt tct gta gtc aga gcc ctt cgc	918
Leu Leu Ala Leu Gly Asn Arg Lys Val Ser Val Val Arg Ala Leu Arg	
196 201 206 211	
cac gcc gtc ccg gca ggg atc ctc tgt tta gga ctg acg gtt gct gtg	966
His Ala Val Pro Ala Gly Ile Leu Cys Leu Gly Leu Thr Val Ala Val	
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gac tct tat ttt tgg cgg cag ctc act tgg ccg gaa gga aag gtg ctt	1014
Asp Ser Tyr Phe Trp Arg Gln Leu Thr Trp Pro Glu Gly Lys Val Leu	
228 233 238 243	
tgg tac aac act gtc ctg aac aaa agc tcc aac tgg ggg acc tcc ccg	1062
Trp Tyr Asn Thr Val Leu Asn Lys Ser Ser Asn Trp Gly Thr Ser Pro	
244 249 254 259	
ctg ctg tgg tac ttc tac tca gcc ctg ccc cgc gcc ctg gcc tgc agc	1110
Leu Leu Trp Tyr Phe Tyr Ser Ala Leu Pro Arg Gly Leu Gly Cys Ser	
260 265 270 275	
ctg ctc ttc atc ccc ctg ggc ttg gta gac aga agg acg cac gcg ccg	1158
Leu Leu Phe Ile Pro Leu Gly Leu Val Asp Arg Arg Thr His Ala Pro	
276 281 286 291	
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Thr Val Leu Ala Leu Gly Phe Met Ala Leu Tyr Ser Leu Leu Pro His	
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aag gag cta cgc ttc atc atc tat gcc ttc ccc atg ctc aac atc acg	1254
Lys Glu Leu Arg Phe Ile Ile Tyr Ala Phe Pro Met Leu Asn Ile Thr	
308 313 318 323	
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Ala Ala Arg Gly Cys Ser Tyr Leu Leu Asn Asn Tyr Lys Lys Ser Trp	
324 329 334 339	
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Leu Tyr Lys Ala Gly Ser Leu Leu Val Ile Gly His Leu Val Val Asn	
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Ala Ala Tyr Ser Ala Thr Ala Leu Tyr Val Ser His Phe Asn Tyr Pro	
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Gly Gly Val Ala Met Gln Arg Leu His Gln Leu Val Pro Pro Gln Thr	
372 377 382 387	
gac gtc ctt ctg cac att gac gtg gca gcc gcc cag aca ggt gtg tct	1494
Asp Val Leu Leu His Ile Asp Val Ala Ala Ala Gln Thr Gly Val Ser	
388 393 398 403	
cgg ttt ctc caa gtc aac agc gcc tgg agg tac gac aag agg gag gat	1542
Arg Phe Leu Gln Val Asn Ser Ala Trp Arg Tyr Asp Lys Arg Glu Asp	
404 409 414 419	
gtg cag ccg ggg aca ggc atg ctg gca tac aca cac atc ctc atg gag	1590
Val Gln Pro Gly Thr Gly Met Leu Ala Tyr Thr His Ile Leu Met Glu	
420 425 430 435	
gcg gcc cct ggg ctc ctg gcc ctc tac agg gac aca cac cgg gtc ctg	1638
Ala Ala Pro Gly Leu Leu Ala Leu Tyr Arg Asp Thr His Arg Val Leu	
436 441 446 451	
gcc agc gtc gtg ggg acc aca ggt gtg agt ctg aac ctg acc caa ctg	1686
Ala Ser Val Val Gly Thr Thr Gly Val Ser Leu Asn Leu Thr Gln Leu	
452 457 462 467	
ccc ccc ttc aac gtc cac ctg cag aca aag ctg gtg ctt ctg gag agg	1734
Pro Pro Phe Asn Val His Leu Gln Thr Lys Leu Val Leu Leu Glu Arg	
468 473 478 483	
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Leu Pro Arg Pro Ser *	
484 489	
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tct cgg acc ctg tac agc agc agc ccc aga gtc cta agc aac aac agt	96
Ser Arg Thr Leu Tyr Ser Ser Ser Pro Arg Val Leu Ser Asn Asn Ser	
17 22 27 32	
gac gcc aac ttg gag ctc atc aac acc tgg gtg gcc aag aac acc aac	144
Asp Ala Asn Leu Glu Leu Ile Asn Thr Trp Val Ala Lys Asn Thr Asn	
33 38 43 48	
aac aag atc agc cgg ctg cta gac agt ctg ccc tcc gat acc cgc ctt	192
Asn Lys Ile Ser Arg Leu Leu Asp Ser Leu Pro Ser Asp Thr Arg Leu	
49 54 59 64	
gtc ctc ctc aat gct atc tac ctg agt gcc aag tgg aag aca aca ttt	240
Val Leu Leu Asn Ala Ile Tyr Leu Ser Ala Lys Trp Lys Thr Thr Phe	
65 70 75 80	
gat ccc aag aaa acc aga atg gaa ccc ttt cac ttc aaa aac tca gtt	288
Asp Pro Lys Lys Thr Arg Met Glu Pro Phe His Phe Lys Asn Ser Val	
81 86 91 96	
ata aaa gtg ccc atg atg aat agc aag aag tac cct gtg gcc cat ttc	336
Ile Lys Val Pro Met Met Asn Ser Lys Lys Tyr Pro Val Ala His Phe	
97 102 107 112	
att gac caa act ttg aaa gcc aag ttg agt cgt ggg gac agc ttg aag	384
Ile Asp Gln Thr Leu Lys Ala Lys Leu Ser Arg Gly Asp Ser Leu Lys	
113 118 123 128	
gag cca acc tca att gca gag agc agc cgt cac ccc agc tac cgc tca	432
Glu Pro Thr Ser Ile Ala Glu Ser Ser Arg His Pro Ser Tyr Arg Ser	
129 134 139 144	

gag ccc agc ttg gaa cca gag agc ttc cgt tct cct acc ttt ggc aaa	480
Glu Pro Ser Leu Glu Pro Glu Ser Phe Arg Ser Pro Thr Phe Gly Lys	
145 150 155 160	
agt ttt cac ttc gat cca cta tcc agt ggc tca cgc tcc tcc agc ctc	528
Ser Phe His Phe Asp Pro Leu Ser Ser Gly Ser Arg Ser Ser Ser Leu	
161 166 171 176	
aag tca gcc cag ggc aca ggc ttt gag ctg ggc cag ttg caa tcc att	576
Lys Ser Ala Gln Gly Thr Gly Phe Glu Leu Gly Gln Leu Gln Ser Ile	
177 182 187 192	
cgt tca gag ggc acc acc tcc acc tcc tat aag agc ctg gcc aac cag	624
Arg Ser Glu Gly Thr Thr Ser Thr Ser Tyr Lys Ser Leu Ala Asn Gln	
193 198 203 208	
aca cgc aat gga agc cta tct tat gac agc ttg ctc aca cct tca gac	672
Thr Arg Asn Gly Ser Leu Ser Tyr Asp Ser Leu Leu Thr Pro Ser Asp	
209 214 219 224	
agc cct gat ttt gag tca gtg cag gca ggg cct gag cca gac cca cct	720
Ser Pro Asp Phe Glu Ser Val Gln Ala Gly Pro Glu Pro Asp Pro Pro	
225 230 235 240	
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Leu Gly Tyr Thr Ser Pro Phe Leu Ser Ala Arg Leu Ala Gln Gln Arg	
241 246 251 256	
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Glu Ala Glu Arg His Pro Arg Leu Val Pro Thr Gly Pro Thr His Arg	
257 262 267 272	
gag ccc tca cca gtc cgt tac gac aat ctg tgc cgc cac att gtg gcc	864
Glu Pro Ser Pro Val Arg Tyr Asp Asn Leu Ser Arg His Ile Val Ala	
273 278 283 288	
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Ser Leu Gln Glu Arg Glu Lys Leu Leu Arg Gln Ser Pro Pro Leu Pro	
289 294 299 304	
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Gly Arg Glu Glu Glu Pro Gly Leu Gly Asp Ser Gly Ile Gln Ser Thr	
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Pro Gly Ser Gly His Ala Pro Arg Thr Ser Ser Ser Ser Asp Asp Ser	
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Lys Arg Ser Pro Leu Gly Lys Thr Pro Leu Gly Arg Pro Ala Val Pro	
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Arg Phe Gly Lys Pro Asp Gly Leu Arg Gly Arg Gly Val Gly Ser Pro	
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Glu Pro Gly Pro Thr Ala Pro Tyr Leu Gly Arg Ser Met Ser Tyr Ser	
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Gln Pro Leu Leu Thr Pro Lys Asp Glu Val Gln Leu Lys Thr Thr Tyr	
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Ser Lys Ser Asn Gly Gln Pro Lys Ser Leu Gly Ser Ala Ser Pro Gly	
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Pro Gly Gln Pro Pro Leu Ser Ser Pro Thr Arg Gly Gly Val Lys Lys	
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aaagaagaag atataggtaa acgcagtcct tttcattaca caagttctat aaccacaaaa 240  
tttggagact cattctactt tttatcaa atattaatt catatttcaa acgtaaggaa 300  
aaa atg tct caa caa aag gaa aat gaa cat ttc cgg gac aaa tca gaa 348  
Met Ser Gln Gln Lys Glu Asn Glu His Phe Arg Asp Lys Ser Glu  
1 5 10  
ctt gaa gat aaa aag gta gaa gag ggg aaa tta aga tct cca gat cct 396  
Leu Glu Asp Lys Lys Val Glu Glu Gly Lys Leu Arg Ser Pro Asp Pro  
16 21 26 31  
ggc atc ctg gct tat aag cca ggc tca gaa tct gta cat acg gtg gac 444  
Gly Ile Leu Ala Tyr Lys Pro Gly Ser Glu Ser Val His Thr Val Asp  
32 37 42 47  
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Lys Pro Thr Ser Pro Ser Ala Ile Pro Asp Val Leu Gln Val Ser Thr  
48 53 58 63  
aaa caa agt att gct aac ttt ctt tct cgt ccc acg gaa ggt gta caa 540  
Lys Gln Ser Ile Ala Asn Phe Leu Ser Arg Pro Thr Glu Gly Val Gln  
64 69 74 79  
gct tta gta ggt ggt tat att ggt gga ctt gtc ccc aaa tta aag tat 588  
Ala Leu Val Gly Gly Tyr Ile Gly Gly Leu Val Pro Lys Leu Lys Tyr  
80 85 90 95  
gat tca aag agt cag tca gaa gaa cag gaa gag cct gct aaa act gat 636  
Asp Ser Lys Ser Gln Ser Glu Glu Gln Glu Pro Ala Lys Thr Asp  
96 101 106 111



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ctt cag cga gaa aag att atc gca agg gtg agt att gat aac agg acc Leu Gln Arg Glu Lys Ile Ile Ala Arg Val Ser Ile Asp Asn Arg Thr 128 133 138 143	732
cgg gca tta gtt cag gca tta aga aga aca act gac cca aag ctc tgc Arg Ala Leu Val Gln Ala Leu Arg Arg Thr Thr Asp Pro Lys Leu Cys 144 149 154 159	780
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ttg ggg ttg ttt cat atg ccc ttg gat gaa tgt gag gaa ctt tat cga Leu Gly Leu Phe His Met Pro Leu Asp Glu Cys Glu Glu Leu Tyr Arg 272 277 282 287	1164
aaa tta gga tca gat gta ttt tca caa aat gtc att gtt gga aca gta Lys Leu Gly Ser Asp Val Phe Ser Gln Asn Val Ile Val Gly Thr Val 288 293 298 303	1212
aaa atg agt tgg agc cat gca ttt tat gac agt caa aca tgg gaa aac Lys Met Ser Trp Ser His Ala Phe Tyr Asp Ser Gln Thr Trp Glu Asn 304 309 314 319	1260
att ctt aag gat agg atg gga tct gca ctg atg att gaa aca gca aga Ile Leu Lys Asp Arg Met Gly Ser Ala Leu Met Ile Glu Thr Ala Arg 320 325 330 335	1308
aac ccc aca tgt cct aag gta gct gct gta agt acc ata gta aat aga	1356

Asn Pro Thr Cys Pro Lys Val Ala Ala Val Ser Thr Ile Val Asn Arg	
336 341 346 351	
ggg ata aca ccc aaa gct ttt gtg ttc aga aac tat ggt cat ttt cct	1404
Gly Ile Thr Pro Lys Ala Phe Val Phe Arg Asn Tyr Gly His Phe Pro	
352 357 362 367	
gga atc aac tct cat tat ttg gga ggc tgt cag tat aaa atg tgg cag	1452
Gly Ile Asn Ser His Tyr Leu Gly Gly Cys Gln Tyr Lys Met Trp Gln	
368 373 378 383	
gcc att aga gcc tca tct gct gct cca ggc tac ttt gca gaa tat gca	1500
Ala Ile Arg Ala Ser Ser Ala Ala Pro Gly Tyr Phe Ala Glu Tyr Ala	
384 389 394 399	
ttg gga aat gat ctt cat caa gat gga ggt ttg ctt ctg aat aac cct	1548
Leu Gly Asn Asp Leu His Gln Asp Gly Gly Leu Leu Leu Asn Asn Pro	
400 405 410 415	
tcg gca tta gct atg cat gag tgt aaa tgt ctt tgg cca gat gtg ccg	1596
Ser Ala Leu Ala Met His Glu Cys Lys Cys Leu Trp Pro Asp Val Pro	
416 421 426 431	
tta gag tgc ata gta tcc ctg ggc act gga cgt tat gag agt gat gtg	1644
Leu Glu Cys Ile Val Ser Leu Gly Thr Gly Arg Tyr Glu Ser Asp Val	
432 437 442 447	
aga aac acg gta aca tac aca agc ttg aaa act aaa ctt tct aat gtt	1692
Arg Asn Thr Val Thr Tyr Thr Ser Leu Lys Thr Lys Leu Ser Asn Val	
448 453 458 463	
atc aac agt gct aca gat aca gaa gaa gtc cat ata atg ctt gat ggc	1740
Ile Asn Ser Ala Thr Asp Thr Glu Glu Val His Ile Met Leu Asp Gly	
464 469 474 479	
ctg tta cct cct gac acc tat ttt aga ttc aat cct gta atg tgt gaa	1788
Leu Leu Pro Pro Asp Thr Tyr Phe Arg Phe Asn Pro Val Met Cys Glu	
480 485 490 495	
aac ata cct cta gat gaa agt cga aat gaa aag ctg gat cag ctg cag	1836
Asn Ile Pro Leu Asp Glu Ser Arg Asn Glu Lys Leu Asp Gln Leu Gln	
496 501 506 511	
ttg gaa ggg ttg aaa tac ata gaa aga aat gaa caa aaa atg aaa aaa	1884
Leu Glu Gly Leu Lys Tyr Ile Glu Arg Asn Glu Gln Lys Met Lys Lys	
512 517 522 527	
gtt gca aaa ata tta agt caa gaa aaa aca act ctg cag aaa att aat	1932
Val Ala Lys Ile Leu Ser Gln Glu Lys Thr Thr Leu Gln Lys Ile Asn	
528 533 538 543	
gat tgg ata aaa tta aaa act gat atg tat gaa gga ctt cca ttc ttt	1980
Asp Trp Ile Lys Leu Lys Thr Asp Met Tyr Glu Gly Leu Pro Phe Phe	
544 549 554 559	
tca aaa ttg tga tga gtatatgctt atgttctcat aaatgaaggt ctgtttagaa	2035
Ser Lys Leu *	

560

gatcaaccac attcaataag gaattgtggg gttcgacatg agttaacttt gaaatacgtg 2095  
 tgaattctgg agaatcctga aaaagacggg gtttcaacca gcttgcatag cacagagaat 2155  
 attcttgggtt acagaattca tatgggaact aggcttttaa gatgttaata attagctaag 2215  
 ctttagtaac ccttactgtg ctagtagatt ttagtagata ttggtgttat attgtttgat 2275  
 gtttgaaaat atattaatat atgtgccgaa caagaaaaaa aaaaaa 2321

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 <211> 1279  
 <212> DNA  
 <213> Homo sapiens

<220>  
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 <222> (103)..(1092)

<400> 569

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gccgccttcc cgcgccccgc agcgccccgc agagcagtcg ag atg ggt gag tca 114  
 Met Gly Glu Ser  
 1

agt gaa gac ata gac caa atg ttc agc act ttg ctg gga gag atg gat 162  
 Ser Glu Asp Ile Asp Gln Met Phe Ser Thr Leu Leu Gly Glu Met Asp  
 5 10 15 20

ctt ctg act cag agt tta gga gtt gac act ctc cct cct cct gac cct 210  
 Leu Leu Thr Gln Ser Leu Gly Val Asp Thr Leu Pro Pro Pro Asp Pro  
 21 26 31 36

aat cca ccc aga gct gaa ttt aac tac agt gtg ggg ttt aaa gat tta 258  
 Asn Pro Pro Arg Ala Glu Phe Asn Tyr Ser Val Gly Phe Lys Asp Leu  
 37 42 47 52

aat gag tcc tta aat gca ctg gaa gac caa gat tta gat gct ctc atg 306  
 Asn Glu Ser Leu Asn Ala Leu Glu Asp Gln Asp Leu Asp Ala Leu Met  
 53 58 63 68

gca gat ctg gta gca gac ata agt gag gct gag cag agg aca atc cag 354  
 Ala Asp Leu Val Ala Asp Ile Ser Glu Ala Glu Gln Arg Thr Ile Gln  
 69 74 79 84

gca cag aaa gag tcc ttg cag aat caa cat cat tca gca tct cta caa 402  
 Ala Gln Lys Glu Ser Leu Gln Asn Gln His His Ser Ala Ser Leu Gln  
 85 90 95 100

gca tca att ttc agt ggt gca gcc tct ctt ggt tat gga aca aat gtt 450  
 Ala Ser Ile Phe Ser Gly Ala Ala Ser Leu Gly Tyr Gly Thr Asn Val

101	106	111	116	
gct gcc act ggt atc agc caa tat gag gat gac tta cca cct cca cca				498
Ala Ala Thr Gly Ile Ser Gln Tyr Glu Asp Asp Leu Pro Pro Pro Pro				
117	122	127	132	
gcc gat cct gtg tta gac ctt cca ctg cca cca cca cct cct gaa cct				546
Ala Asp Pro Val Leu Asp Leu Pro Leu Pro Pro Pro Pro Pro Glu Pro				
133	138	143	148	
ctc tct cag gaa gag gaa gaa gcc caa gcc aag gct gat aaa att aag				594
Leu Ser Gln Glu Glu Glu Glu Ala Gln Ala Lys Ala Asp Lys Ile Lys				
149	154	159	164	
ctg gcg ctg gaa aaa ctg aag gag gcc aag gtt aag aag ctc gtc gtc				642
Leu Ala Leu Glu Lys Leu Lys Glu Ala Lys Val Lys Lys Leu Val Val				
165	170	175	180	
aag gtg cac atg aat gat aac agc aca aag tca ctg atg gtg gat gag				690
Lys Val His Met Asn Asp Asn Ser Thr Lys Ser Leu Met Val Asp Glu				
181	186	191	196	
cgg cag ctg gcc cga gat gtt ctg gac aac ctt ttc gag aaa act cat				738
Arg Gln Leu Ala Arg Asp Val Leu Asp Asn Leu Phe Glu Lys Thr His				
197	202	207	212	
tgt gac tgc aat gta gac tgg tgt ctt tat gaa atc tac ccg gaa cta				786
Cys Asp Cys Asn Val Asp Trp Cys Leu Tyr Glu Ile Tyr Pro Glu Leu				
213	218	223	228	
caa att gag agg ttt ttt gaa gac cat gaa aat gtt gtt gaa gtc tta				834
Gln Ile Glu Arg Phe Phe Glu Asp His Glu Asn Val Val Glu Val Leu				
229	234	239	244	
tca gac tgg aca aga gac aca gaa aat aaa ata cta ttt ttg gag aaa				882
Ser Asp Trp Thr Arg Asp Thr Glu Asn Lys Ile Leu Phe Leu Glu Lys				
245	250	255	260	
gag gag aaa tat gct gta ttt aaa aac ccc cag aat ttc tac ttg gat				930
Glu Glu Lys Tyr Ala Val Phe Lys Asn Pro Gln Asn Phe Tyr Leu Asp				
261	266	271	276	
aac aga gga aaa aaa gaa agc aag gaa act aat gag aaa atg aat gct				978
Asn Arg Gly Lys Lys Glu Ser Lys Glu Thr Asn Glu Lys Met Asn Ala				
277	282	287	292	
aag aac aag gaa tcc tta ctt gag gta agg tta att ttg cag agt gga				1026
Lys Asn Lys Glu Ser Leu Leu Glu Val Arg Leu Ile Leu Gln Ser Gly				
293	298	303	308	
aga aaa gag aag gac gtt tgc tct att ttt aag tca ttt gct tcc gag				1074
Arg Lys Glu Lys Asp Val Cys Ser Ile Phe Lys Ser Phe Ala Ser Glu				
309	314	319	324	
aac aat gga aaa atc taa agacat acactgaaat tttaagttgg ggtgttaaaa				1128
Asn Asn Gly Lys Ile *				
325	330			

tcaaattatt tctaaattat agctatttag ataattcaac tgtttttctt ttttgagtca 1188  
 tttgttacaa catgtggctt tagataaatg aagctggatt tgtaattctt gactttttaa 1248  
 aaactctagc attccaagtt tccattactt a 1279

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 <211> 1546  
 <212> DNA  
 <213> Homo sapiens

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 <222> (251)..(940)

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 atcttcagct tctgtccac gcgcgcgctg gccgccctca agtgcacctg ccaccacttc 180  
 aagggcatca tgcaggcggtt tggcgtgcgg gccacagact cgcgctggag ccgagacccg 240  
 ctctaccgcg atg atc cgt gca aac agt gcc gca aga gat acg aga agg 289  
 Met Ile Arg Ala Asn Ser Ala Ala Arg Asp Thr Arg Arg  
 1 5 10  
 gcg acg tgt cgc tct gcc gct ggc acc cca agc cct acc acc atg acc 337  
 Ala Thr Cys Arg Ser Ala Ala Gly Thr Pro Ser Pro Thr Thr Met Thr  
 14 19 24 29  
 tgc ctt acg gac gtt cct act gga tgt gct gcc gtc gag ccg acc gcg 385  
 Cys Leu Thr Asp Val Pro Thr Gly Cys Ala Ala Val Glu Pro Thr Ala  
 30 35 40 45  
 aga ctc ccg gct gcc gcc tgg gcc tcc acg ata aca act ggg tgc tgc 433  
 Arg Leu Pro Ala Ala Ala Trp Ala Ser Thr Ile Thr Thr Gly Cys Cys  
 46 51 56 61  
 cct gca atg ggc cag gcg ggg gcc ggg ccg gcc ggg agg aag gga agt 481  
 Pro Ala Met Gly Gln Ala Gly Ala Gly Pro Ala Gly Arg Lys Gly Ser  
 62 67 72 77  
 gaa gcc ggg gga ggg ccg ggg aga gcc cac cac gcc cac ccc tcc cct 529  
 Glu Ala Gly Gly Gly Pro Gly Arg Ala His His Ala His Pro Ser Pro  
 78 83 88 93  
 ctc ccc ccg gag ccg agg gtc ccg act ggg ccg cct gcc cat tcc cct 577  
 Leu Pro Arg Glu Pro Arg Val Arg Thr Gly Pro Pro Ala His Ser Pro  
 94 99 104 109  
 act cca ggc agc att gat ccc tca ccg gaa ctg agc tgg ggt tca gca 625

Thr Pro Gly Ser Ile Asp Pro Ser Pro Glu Leu Ser Trp Gly Ser Ala	
110 115 120 125	
ggg gtg acc cag gaa agc cct ctg ctt gat cct gtt gat ttt cta ctc	673
Gly Val Thr Gln Glu Ser Pro Leu Leu Asp Pro Val Asp Phe Leu Leu	
126 131 136 141	
ttc aga acc agg gcc gtg gac cct ctg aga agg gtg ttt ttt ttt ttt	721
Phe Arg Thr Arg Ala Val Asp Pro Leu Arg Arg Val Phe Phe Phe Phe	
142 147 152 157	
tat cag cat ctc act ttc ttc tcc att cag ccc caa ccc cct ccc tgc	769
Tyr Gln His Leu Thr Phe Phe Ser Ile Gln Pro Gln Pro Pro Pro Cys	
158 163 168 173	
cat gct ttc cac ccc aag gac cca cca gca ggg agc aga cgg cag cta	817
His Ala Phe His Pro Lys Asp Pro Pro Ala Gly Ser Arg Arg Gln Leu	
174 179 184 189	
att ttg gta cca ctt aag ggt ccc ccc att ctg gcc ccc atc ctc tcc	865
Ile Leu Val Pro Leu Lys Gly Pro Pro Ile Leu Ala Pro Ile Leu Ser	
190 195 200 205	
ctc acc cca att ctt tct cgc tgg agc tgt tat ttc cca aga agc cgc	913
Leu Thr Pro Ile Leu Ser Arg Trp Ser Cys Tyr Phe Pro Arg Ser Arg	
206 211 216 221	
atc gcc caa ggt tgg cac ctc tcc taa cctgc cacacgacag ctctcacctc	965
Ile Ala Gln Gly Trp His Leu Ser *	
222 227	
tctaggaatt gggggctgtc aggtcacagg tgggatctgg catttttttta tgacagtcca	1025
tttctagatg gtttgccat taaagaagtg ggggggaaat actgttttct ccttaacctc	1085
aagctaccag tctctcctct tccgcgtaga ggaagagggg ggcagacaaa aaaaaagctg	1145
aagtataaaa accctcctcc tcccgttatt atttaagcta ctgccatcaa cccaccccc	1205
ataaagctgt gaagcccttt gcctcgcttt tgacagcgtg ggggggcccc gtgggcagg	1265
acttcggatt tgcattttctg ggttggtttt ccttcactc tggggtctcg ttcaggcatt	1325
ggggtctcct caccacagcc acatgtttct ttaagaatcc tttggtcaac caggaccttg	1385
atctttcagg catttttggtc tggggtattt ttgtttgttc tctctgtttt ttgttttctt	1445
ttttttcttt ccctcgtggt tctggaagct tctagcgtgt ggcactctgac caattttgaa	1505
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<210> 571  
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 <212> DNA

<213> Homo sapiens

<220>

<221> CDS

<222> (1)..(1650)

<400> 571

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1 5 10	
ctg cac cgg cct ttc tac ccg gct gtc gag ggc acc ctg tgc ctg acg	96
Leu His Arg Pro Phe Tyr Pro Ala Val Glu Gly Thr Leu Cys Leu Thr	
17 22 27 32	
ggc cac cac ttg atc ctg tcc tcc cgg cag gac aat acg gag gag ctg	144
Gly His His Leu Ile Leu Ser Ser Arg Gln Asp Asn Thr Glu Glu Leu	
33 38 43 48	
tgg ctc ctc cat tca aac atc gac gcc atc gac aag cga ttt gta gga	192
Trp Leu Leu His Ser Asn Ile Asp Ala Ile Asp Lys Arg Phe Val Gly	
49 54 59 64	
tca ctg ggt acc atc atc ata aaa tgt aaa gat ttt cga att att cag	240
Ser Leu Gly Thr Ile Ile Ile Lys Cys Lys Asp Phe Arg Ile Ile Gln	
65 70 75 80	
ttg gat att cct gga atg gag gaa tgc ttg aat ata gcc agt tcc att	288
Leu Asp Ile Pro Gly Met Glu Glu Cys Leu Asn Ile Ala Ser Ser Ile	
81 86 91 96	
gag gca ttg tct act ctg gac tcc atc act ctg atg tac cct ttc ttt	336
Glu Ala Leu Ser Thr Leu Asp Ser Ile Thr Leu Met Tyr Pro Phe Phe	
97 102 107 112	
tac cgt cct atg ttt gaa gtg ata gaa gat ggc tgg cat tcc ttc ctt	384
Tyr Arg Pro Met Phe Glu Val Ile Glu Asp Gly Trp His Ser Phe Leu	
113 118 123 128	
cct gag caa gaa ttt gaa ctc tat tct tca gct acc agt gaa tgg agg	432
Pro Glu Gln Glu Phe Glu Leu Tyr Ser Ser Ala Thr Ser Glu Trp Arg	
129 134 139 144	
cta agc tat gtc aat aag gaa ttt gct gtc tgt ccc tct tac cca cca	480
Leu Ser Tyr Val Asn Lys Glu Phe Ala Val Cys Pro Ser Tyr Pro Pro	
145 150 155 160	
att gtc aca gtg ccc aaa tcc atc gat gat gaa gct ctt cgg aag gta	528
Ile Val Thr Val Pro Lys Ser Ile Asp Asp Glu Ala Leu Arg Lys Val	
161 166 171 176	
gct aca ttt cga cat gga ggg cgc ttc cca gta cta agc tat tac cac	576
Ala Thr Phe Arg His Gly Gly Arg Phe Pro Val Leu Ser Tyr Tyr His	
177 182 187 192	
aaa aga aat ggg atg gta att atg cga agt ggt cag cca ctc act ggt	624
Lys Arg Asn Gly Met Val Ile Met Arg Ser Gly Gln Pro Leu Thr Gly	

193	198	203	208	
aca aac ggg agg agg tgc aag gag gac gag aag ctg ata aat gct acc				672
Thr Asn Gly Arg Arg Cys Lys Glu Asp Glu Lys Leu Ile Asn Ala Thr				
209	214	219	224	
ctc agg gct gga aag cgt ggc tac atc att gac acc cga tcc ctg aac				720
Leu Arg Ala Gly Lys Arg Gly Tyr Ile Ile Asp Thr Arg Ser Leu Asn				
225	230	235	240	
gtg gct cag caa act aga gcc aaa gga ggt ggc ttt gaa caa gaa gct				768
Val Ala Gln Gln Thr Arg Ala Lys Gly Gly Gly Phe Glu Gln Glu Ala				
241	246	251	256	
cat tat cct cag tgg agg cga att cat aag tcc att gag agg tat cac				816
His Tyr Pro Gln Trp Arg Arg Ile His Lys Ser Ile Glu Arg Tyr His				
257	262	267	272	
att ctt cag gag agc tta atc aaa ctt gtg gaa gct tgt aat gac caa				864
Ile Leu Gln Glu Ser Leu Ile Lys Leu Val Glu Ala Cys Asn Asp Gln				
273	278	283	288	
aca cat aac atg gac cga tgg ctc agt aaa ttg gag gcc tct aac tgg				912
Thr His Asn Met Asp Arg Trp Leu Ser Lys Leu Glu Ala Ser Asn Trp				
289	294	299	304	
ctg act cac atc aaa gag att ctg aca acc gcc tgc cta gcg gct cag				960
Leu Thr His Ile Lys Glu Ile Leu Thr Thr Ala Cys Leu Ala Ala Gln				
305	310	315	320	
tgc atc gac agg gaa gga gca tca ata ttg att cac gga aca gaa gga				1008
Cys Ile Asp Arg Glu Gly Ala Ser Ile Leu Ile His Gly Thr Glu Gly				
321	326	331	336	
act gat tcc aca ctc cag gtg acc tcc ttg gcc cag atc atc tta gag				1056
Thr Asp Ser Thr Leu Gln Val Thr Ser Leu Ala Gln Ile Ile Leu Glu				
337	342	347	352	
cca aga agc agg acc att cgt ggt ttt gag gcc ctg att gaa aga gag				1104
Pro Arg Ser Arg Thr Ile Arg Gly Phe Glu Ala Leu Ile Glu Arg Glu				
353	358	363	368	
tgg ctg cag gct ggt cac cca ttc cag cag cgc tgt gca cag tca gcc				1152
Trp Leu Gln Ala Gly His Pro Phe Gln Gln Arg Cys Ala Gln Ser Ala				
369	374	379	384	
tac tgt aac acc aag cag aag tgg gag gct cct gta ttt ctt ctc ttc				1200
Tyr Cys Asn Thr Lys Gln Lys Trp Glu Ala Pro Val Phe Leu Leu Phe				
385	390	395	400	
ttg gac tgc gtg tgg cag atc ctt cgt cag ttt ccc tgt tct ttt gag				1248
Leu Asp Cys Val Trp Gln Ile Leu Arg Gln Phe Pro Cys Ser Phe Glu				
401	406	411	416	
ttt aat gag att ttc ctc atc atg ctc ttt gag cat gct tat gcc tca				1296
Phe Asn Glu Ile Phe Leu Ile Met Leu Phe Glu His Ala Tyr Ala Ser				
417	422	427	432	



cag ttt gga aca ttt ctg ggc aac aat gaa agt gaa aga tgt aag ttg	1344
Gln Phe Gly Thr Phe Leu Gly Asn Asn Glu Ser Glu Arg Cys Lys Leu	
433 438 443 448	
aag cta cag cag aag acg atg tct ttg tgg tcc tgg gtt aat cag ccc	1392
Lys Leu Gln Gln Lys Thr Met Ser Leu Trp Ser Trp Val Asn Gln Pro	
449 454 459 464	
agt gag ctg agt aaa ttc acc aat ccc ctc ttt gaa gcc aac aac ctt	1440
Ser Glu Leu Ser Lys Phe Thr Asn Pro Leu Phe Glu Ala Asn Asn Leu	
465 470 475 480	
gtc atc tgg cct tca gtt gct ccg cag agt ctt cca ctg tgg gaa ggt	1488
Val Ile Trp Pro Ser Val Ala Pro Gln Ser Leu Pro Leu Trp Glu Gly	
481 486 491 496	
att ttc cta cgt tgg aat aga tcc tct aag tat ttg gat gaa gca tat	1536
Ile Phe Leu Arg Trp Asn Arg Ser Ser Lys Tyr Leu Asp Glu Ala Tyr	
497 502 507 512	
gaa gaa atg gtt aac atc att gaa tat aat aaa gaa tta caa gca aaa	1584
Glu Glu Met Val Asn Ile Ile Glu Tyr Asn Lys Glu Leu Gln Ala Lys	
513 518 523 528	
gtc aat atc ctt cga agg cag ttg gca gaa ctg gaa aca gag gac ggg	1632
Val Asn Ile Leu Arg Arg Gln Leu Ala Glu Leu Glu Thr Glu Asp Gly	
529 534 539 544	
atg cag gag agt ccc tga aaggtc tcctcgacc cttegcaagg accttcttgg	1686
Met Gln Glu Ser Pro *	
545 550	
gcctgtgtcc gccgttctct ccttgtgccc ttcagttcac ttttacacgg tagccttgaa	1746
gtgaaggcctt tagatgtggg acccccctaa tgtaatggat ttctcaatac tgtatgaata	1806
atgaaactta ctatcataaa ccattgtttca tgtggcctgt tagggcctgt cactttggga	1866
gccggaagga ggtgctagtc attttatttt tacgtgaaat agatgacctt tttaatgcca	1926
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tctagagcag tcaaggagac agctaattctc tctagggact atttggtggg ttaaaaaaag	2046
ggtcagactt ttaaacactc tgaccataga aatgtttttc aaaatggcaa caatggataa	2106
accaaggatt ttgtgtttta caatccattt ccagtgtctt cgccacataa aatagccatt	2166
ttcttttaaaa tagtttttga ctaacgaagc tgaaatctat tctcattctt gtttgtcaag	2226
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atacaattaa agtaggaatt tgttactgat tgagaattgt tactggtgaa ttggttttca	2406

ggttttgagc atacatatac aatgtgtttc aaatgctgct tgtaaaatta aaccatcatc 2466  
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 actgcccttg tctaaagttc ttattgcact ggtttatatg tgtatgtgtg ttttattgtg 2586  
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 caaatataac ttaagtggag ggggaagttt atgaatataa tatagctctg tgttttaaac 2766  
 ctgagaaaca gatttgagtg tttcagtatt atagaaacag tgatgactat tcatgctctg 2826  
 ctagtctatg cctgcaactc caaatgtttg tggttcagta tttccacact acattttctgt 2886  
 ttggtgacat tgotcatttt aacaaatatg accgagtcta gtttttcttt aaaaggatag 2946  
 tttatgagta atctttaaaa ccatttccat accatctgta tataaccatt tcggtagaga 3006  
 acacactaca ctgaaccctg ctttagagct gtgtgttgag ctaaaaatat aattttttaa 3066  
 aaattgacta gcaaaatcta tggccacact gagaagcctt tgaaaatggc aaatactttt 3126  
 catcaccaat tgcccaattc atctttcttc tgcttcctca gccttgtagc aaaggctaca 3186  
 cagcagccca cagtccacag tctttttggg aaaattggcc tgccaccttc ttttaagctca 3246  
 gtttattttt gacttacttt ctttgcgtga gttatgaacc ttggggcatt aaaatcccat 3306  
 ggcaaggagc ataagagatg ttctcgtagc tctgcgttgt gtgaaatgtc catcttagtt 3366  
 ttgttaaaaa aaaaaaaaaag tcgagcggcc gcgaagcgag tagtagtagg cggccgctct 3426  
 agaggatcca agcttacgta cgcggtgcacg cgacgtcata gctc 3470

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 <212> DNA  
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<220>  
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 <222> (202)..(1212)

<220>  
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 <222> (1)...(2728)  
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Met Thr Asp Leu Asn Asp Asn Ile Cys Lys						
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Arg Tyr Ile Lys Met	Ile Thr Asn Ile Val	Ile Leu Ser Leu Ile Ile				
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tgc att tcg tta gct ttc	tgg att ata tca atg	act gca agc acc tat				327
Cys Ile Ser Leu Ala Phe	Trp Ile Ile Ser Met	Thr Ala Ser Thr Tyr				
27	32	37	42			
tat ggt aac tta cga cct	att tct ccg tgg cgt	tgg ctg ttt tct gtt				375
Tyr Gly Asn Leu Arg Pro	Ile Ser Pro Trp Arg	Trp Leu Phe Ser Val				
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gtt gtt cct gtt ctg atc	gtc tct aat ggc ctt	aaa aag aaa agt cta				423
Val Val Pro Val Leu Ile	Val Ser Asn Gly Leu	Lys Lys Lys Ser Leu				
59	64	69	74			
gat cac agt ggg gct cta	gga ggg cta gtc gtt	gga ttt atc cta acc				471
Asp His Ser Gly Ala Leu	Gly Gly Leu Val Val	Gly Phe Ile Leu Thr				
75	80	85	90			
att gca aat ttc agc ttt	ttt acc tct ttg ctg	atg ttt ttc ttg tct				519
Ile Ala Asn Phe Ser Phe	Phe Thr Ser Leu Leu	Met Phe Phe Leu Ser				
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Ser Ser Lys Leu Thr Lys	Trp Lys Gly Glu Val	Lys Lys Arg Leu Asp				
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Ser Glu Tyr Lys Glu Gly	Gly Gln Arg Asn Trp	Val Gln Val Phe Cys				
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aat gga gct gta ccc aca	gaa ctg gcc ctg ctg	tac atg ata gaa aat				663
Asn Gly Ala Val Pro Thr	Glu Leu Ala Leu Leu	Tyr Met Ile Glu Asn				
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Gly Pro Gly Glu Ile Pro	Val Asp Phe Ser Lys	Gln Tyr Ser Ala Ser				
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Trp Met Cys Leu Ser Leu	Leu Ala Ala Leu Ala	Cys Ser Ala Gly Asp				
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Thr Trp Ala Ser Glu Val	Gly Pro Val Leu Ser	Lys Ser Ser Pro Arg				
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Leu Ile Thr Thr Trp Glu	Lys Val Pro Val Gly	Thr Asn Gly Gly Val				

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Thr Val Val Gly Leu Val Ser Ser Leu Leu Gly Gly Thr Phe Val Gly				
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Ile Ala Tyr Phe Leu Thr Gln Leu Ile Phe Val Asn Asp Leu Asp Ile				
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Ser Ala Pro Gln Trp Pro Ile Ile Ala Phe Gly Gly Leu Ala Gly Leu				
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Leu Gly Ser Ile Val Asp Ser Tyr Leu Gly Ala Thr Met Gln Tyr Thr				
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Ala Arg His Ile Ala Gly Lys Pro Ile Leu Asp Asn Asn Ala Val Asn				
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Leu Phe Ser Ser Val Leu Ile Ala Leu Leu Leu Pro Thr Ala Ala Trp				
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Ala Ser Gln Met Pro Leu Glu Asn Thr Thr Val Gln Gln Met Val Phe	
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Met Leu Leu Ser Asn Leu Ala Leu Ser His Asp Cys Lys Gly Val Ile	
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Gln Lys Ser Asn Phe Leu Gln Asn Phe Leu Ser Leu Ala Leu Pro Lys	
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Gly Gly Asn Lys His Leu Ser Asn Leu Thr Ile Leu Trp Leu Lys Leu	
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Leu Leu Asn Ile Ser Ser Gly Glu Asp Gly Gln Gln Met Ile Leu Arg	
72 77 82 87	
ctt gat ggc tgt cta gac tta cta aca gag atg agc aaa tac aag cac	642
Leu Asp Gly Cys Leu Asp Leu Leu Thr Glu Met Ser Lys Tyr Lys His	
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Lys Ser Ser Pro Leu Leu Pro Leu Leu Ile Phe His Asn Val Cys Phe	
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Ser Pro Ala Asn Lys Pro Lys Ile Leu Ala Asn Glu Lys Val Ile Thr	
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Val Leu Ala Ala Cys Leu Glu Ser Glu Asn Gln Asn Ala Gln Arg Ile	
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Gly Ala Ala Ala Leu Trp Ala Leu Ile Tyr Asn Tyr Gln Lys Ala Lys	
152 157 162 167	
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Thr Ala Leu Lys Ser Pro Ser Val Lys Arg Arg Val Asp Glu Ala Tyr	
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Ser Leu Ala Lys Lys Thr Pro *	
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١٥٥٠

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Leu	Pro	Phe	Leu	Pro	Asp	Ser	Pro	Arg	Tyr	Leu	Leu	Leu	Glu	Lys	His		
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Asn	Glu	Ala	Arg	Ala	Val	Lys	Ala	Phe	Gln	Thr	Phe	Leu	Gly	Lys	Ala		
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cac	gtt	tcc	caa	gag	gta	gag	gag	gtc	ctg	gct	gag	agc	cgc	gtg	cag		836
His	Val	Ser	Gln	Glu	Val	Glu	Glu	Val	Leu	Ala	Glu	Ser	Arg	Val	Gln		
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Arg	Ser	Ile	Arg	Leu	Val	Ser	Val	Leu	Glu	Leu	Leu	Arg	Ala	Pro	Tyr		
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Val	Arg	Trp	Gln	Val	Val	Thr	Val	Ile	Val	Thr	Met	Ala	Cys	Tyr	Gln		
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ctc	tgt	ggc	ctc	aat	gca	att	tgg	ttc	tat	acc	aac	agc	atc	ttt	gga		980
Leu	Cys	Gly	Leu	Asn	Ala	Ile	Trp	Phe	Tyr	Thr	Asn	Ser	Ile	Phe	Gly		
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Lys	Ala	Gly	Ile	Pro	Pro	Ala	Lys	Ile	Pro	Tyr	Val	Thr	Leu	Ser	Thr		
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Gly	Gly	Ile	Glu	Thr	Leu	Ala	Ala	Val	Phe	Ser	Gly	Leu	Val	Ile	Glu		
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His	Leu	Gly	Arg	Arg	Pro	Leu	Leu	Ile	Gly	Gly	Phe	Gly	Leu	Met	Gly		
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Leu	Phe	Phe	Gly	Thr	Leu	Thr	Ile	Thr	Leu	Thr	Leu	Gln	Asp	His	Ala		
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Pro	Trp	Val	Pro	Tyr	Leu	Ser	Ile	Val	Gly	Ile	Leu	Ala	Ile	Ile	Ala		
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Ser	Phe	Cys	Ser	Gly	Pro	Gly	Gly	Ile	Pro	Phe	Ile	Leu	Thr	Gly	Glu		
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Ile Thr Gly Ala Ile Tyr Leu Tyr Phe Val Leu Pro Glu Thr Lys Asn				
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Arg Thr Tyr Ala Glu Ile Ser Gln Ala Phe Ser Lys Arg Asn Lys Ala				
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Ile Thr Glu Phe Leu Gly Gln Pro Tyr Phe Glu Ala Phe Lys Lys Lys	
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Leu Lys Thr Thr Lys Tyr Ser Ser Gln Lys Val Ile Gly Thr Pro His	
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Ala Lys Ser Phe Val Gln Arg Phe Arg Glu Ala Glu Ser Phe Thr Gln	
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Arg Leu Lys His Leu Glu Ala Gln Gly Thr Ser Leu Pro Lys Lys Leu	
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Glu Cys Ile Lys Thr Ser Ile Cys Asn His Leu Leu Arg Gly Ser Gly	
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Ile Lys Thr Ser Lys His His Leu Arg Gln Arg Arg Ser Gln Asn Lys	
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Phe Leu Arg Arg Gln Arg Lys Pro Gln Arg Lys Leu Gln Ser Thr Leu	
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Asp Thr Ser Ala Lys Trp Arg Leu Ser His Cys Thr Val His Arg Thr	
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Asp Leu Tyr Pro Asn Ser Lys Gln Leu Leu Asn Ser Gly Val Ser Met	
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 Met Ala Ala Val Pro Pro Gly Leu Glu Pro Trp Asn Arg Val Arg Ile  
 2 7 12 17  
 cct aag gcg ggg aac cgc agc gca gtg aca gtg cag aac ccc ggc gcg 391  
 Pro Lys Ala Gly Asn Arg Ser Ala Val Thr Val Gln Asn Pro Gly Ala  
 18 23 28 33  
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 Ala Leu Val Glu Gln Cys Leu Lys Arg Leu Lys Asn Met Asn Leu Glu  
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 Gly Ser Ile Gln Asp Leu Phe Glu Leu Phe Ser Ser Asn Glu Asn Gln  
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 Pro Leu Thr Thr Lys Val Cys Val Val Pro Ser Gln Pro Val Val Glu  
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Arg Leu Trp Val Leu Tyr Lys Gly Val Leu Lys Arg Leu Ile Leu Leu	
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Tyr Glu Pro Leu Phe Gly Leu Leu Gln Glu Val Ala Arg Ile Gln Pro	
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Glu Thr Ser Phe Asp Phe Lys Cys Ser Gln Ser Arg Leu Lys Thr Thr	
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Lys Tyr Ser Ser Gln Lys Val Ile Gly Thr Pro His Ala Lys Ser Phe	
290 295 300 305	
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Val Gln Arg Phe Arg Glu Ala Glu Ser Phe Thr Gln Leu Ser Glu Glu	
306 311 316 321	
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Gln Gln Phe Ser Gln Gly Thr Arg Lys Ser Ala Thr Asp Thr Ser Ala	
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Lys Tyr Lys Asp Leu Asp Glu Asp Glu Leu Leu Gly Asn Leu Ser Glu  
11 16 21 26

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27 32 37 42

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Asn Ala Leu Leu Pro Ala Gly Phe Arg Gln Lys Asn Gln Thr Ser Lys  
43 48 53 58

tcc acc aca ggg cca ttt gat aga gag cat ctc ctt tca tat ctg gag 482  
Ser Thr Thr Gly Pro Phe Asp Arg Glu His Leu Leu Ser Tyr Leu Glu  
59 64 69 74

aaa gaa gca ttg gag cat aaa gac agg gaa gac tat gtg ccc tac act 530  
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75 80 85 90

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91 96 101 106

act ttt aca gaa gaa aaa gtg tct ctt gat cca gaa tta gaa gaa gct 626  
Thr Phe Thr Glu Glu Lys Val Ser Leu Asp Pro Glu Leu Glu Glu Ala  
107 112 117 122

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123 128 133 138

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139 144 149 154

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 Gly Pro Gly Val Arg Ala Ala Pro Pro Arg Asp Pro Arg Pro Ser His  
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 Pro Glu Pro Arg Gly Cys Gly Ala Ala Pro Gly Arg Thr Leu His Phe  
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 Thr Ala Ala Val Pro Ala Gly His Asn Lys Trp Ser Lys Val Arg His  
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 Ile Lys Gly Pro Lys Asp Val Glu Arg Ser Arg Ile Phe Ser Lys Leu  
 69 74 79 84  
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 Cys Leu Asn Ile Arg Leu Ala Val Lys Glu Gly Gly Pro Asn Pro Glu  
 85 90 95 100  
 cac aac agc aac ctg gcc aat atc tta gag gtg tgt cgc agc aaa cat 452  
 His Asn Ser Asn Leu Ala Asn Ile Leu Glu Val Cys Arg Ser Lys His  
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Leu Ile Glu Ala Leu Ser Asn Ser Ser His Lys Cys Gln Ala Asp Ile	
149 154 159 164	
aga cat atc ctg aat aag aat gga gga gtg atg gct gta gga gct cgt	644
Arg His Ile Leu Asn Lys Asn Gly Gly Val Met Ala Val Gly Ala Arg	
165 170 175 180	
cac tct ttt gac aaa aag ggg gtg att gtg gtt gaa gtg gag gac aga	692
His Ser Phe Asp Lys Lys Gly Val Ile Val Val Glu Val Glu Asp Arg	
181 186 191 196	
gag aag aag gct gtg aac cta gag cgt gcc ctg gag atg gca atc gaa	740
Glu Lys Lys Ala Val Asn Leu Glu Arg Ala Leu Glu Met Ala Ile Glu	
197 202 207 212	
gca gga gct gag gat gtc aag gaa act gaa gat gaa gaa gaa agg aac	788
Ala Gly Ala Glu Asp Val Lys Glu Thr Glu Asp Glu Glu Glu Arg Asn	
213 218 223 228	
gtt ttt aaa ttt att tgt gat gcc tct tca ctg cac caa gtg agg aag	836
Val Phe Lys Phe Ile Cys Asp Ala Ser Ser Leu His Gln Val Arg Lys	
229 234 239 244	
aag ctg gac tcc ctg ggc ctg tgt tct gtg tcc tgt gca cta gag ttc	884
Lys Leu Asp Ser Leu Gly Leu Cys Ser Val Ser Cys Ala Leu Glu Phe	
245 250 255 260	
atc ccc aac tca aag gtg cag ctg gct gag ccc gac ctg gaa cag gcc	932
Ile Pro Asn Ser Lys Val Gln Leu Ala Glu Pro Asp Leu Glu Gln Ala	
261 266 271 276	
gca cat ctc att cag gct ctc agc aac cac gag gat gtg att cac gtc	980
Ala His Leu Ile Gln Ala Leu Ser Asn His Glu Asp Val Ile His Val	
277 282 287 292	
tat gat aac att gaa taa ccaggc tacatgtgcc cccgggttcc ttcctagaaa	1034
Tyr Asp Asn Ile Glu *	
293 298	
tgtggcagcc cattccagca cacaggcttc tgcagcaatc tctgagggtta aagccggtgg	1094
gaggctcagc aggccaggag gcccaaggac aggacttgcg acottgaagc caaaggaatc	1154
tcacttggtgg ggctctcttg tcagctctgc tgctgtctca gagccatctg gatgagtgtc	1214
cogacacct ctcggatgca gggcaggacc acccagctgg tcagactctg atgttgggta	1274
gctggcctct gtggggattg taagtgcct gaggcgctct gtactagaaa ctgctcttaa	1334

taataacggt gattattggt tgctgcaaaa aaaaaaaaa

1372

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<211> 2224  
<212> DNA  
<213> Homo sapiens

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<222> (121)..(1953)

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atg gag aca gcc ccc aag ccg ggc aag gat gtc ccg ccc aag aaa gac 168  
Met Glu Thr Ala Pro Lys Pro Gly Lys Asp Val Pro Pro Lys Lys Asp  
1 5 10 15  
aaa ctt cag acc aag aga aag aaa ccg cgg cga tac tgg gag gaa gag 216  
Lys Leu Gln Thr Lys Arg Lys Lys Pro Arg Arg Tyr Trp Glu Glu Glu  
17 22 27 32  
acc gtt ccg acc aca gcc gga gcc tct cca ggg cct cct cgt aac aag 264  
Thr Val Pro Thr Thr Ala Gly Ala Ser Pro Gly Pro Pro Arg Asn Lys  
33 38 43 48  
aag aat cgg gag ctc cgt cct cag aga cca aaa aat gct tac atc tta 312  
Lys Asn Arg Glu Leu Arg Pro Gln Arg Pro Lys Asn Ala Tyr Ile Leu  
49 54 59 64  
aag aag tct cgg atc tct aag aag cct cag gtc ccg aag aaa ccc cga 360  
Lys Lys Ser Arg Ile Ser Lys Lys Pro Gln Val Pro Lys Lys Pro Arg  
65 70 75 80  
gaa tgg aag aac ccg gag tcc cag cgc ggc ttg tcc ggg gcc caa gat 408  
Glu Trp Lys Asn Pro Glu Ser Gln Arg Gly Leu Ser Gly Ala Gln Asp  
81 86 91 96  
cca ttc cca ggc ccc gcc ccc gtc cct gtg gaa gtg gtc cag aag ttc 456  
Pro Phe Pro Gly Pro Ala Pro Val Pro Val Glu Val Val Gln Lys Phe  
97 102 107 112  
tgt cgc att gac aaa tcc cga aag cta cca cat tct aaa gcc aaa act 504  
Cys Arg Ile Asp Lys Ser Arg Lys Leu Pro His Ser Lys Ala Lys Thr  
113 118 123 128

cga agc cga ctt gag gtg gct gaa gct gag gaa gag gaa aca agt atc	552
Arg Ser Arg Leu Glu Val Ala Glu Ala Glu Glu Glu Glu Thr Ser Ile	
129 134 139 144	
aaa gct gct cgt tct gag ctg ctg ctt gct gaa gaa cct ggg ttt ctg	600
Lys Ala Ala Arg Ser Glu Leu Leu Leu Ala Glu Glu Pro Gly Phe Leu	
145 150 155 160	
gaa ggg gag gat ggg gaa gac aca gca aag ata tgc cag gct gac att	648
Glu Gly Glu Asp Gly Glu Asp Thr Ala Lys Ile Cys Gln Ala Asp Ile	
161 166 171 176	
gtg gag gct gtg gac att gca agt gca gcc aag cac ttt gac ttg aat	696
Val Glu Ala Val Asp Ile Ala Ser Ala Ala Lys His Phe Asp Leu Asn	
177 182 187 192	
ctg cgg cag ttt gga ccc tac aga cta aac tac tct cga act gga aga	744
Leu Arg Gln Phe Gly Pro Tyr Arg Leu Asn Tyr Ser Arg Thr Gly Arg	
193 198 203 208	
cac ctg gct ttt gga ggg cgc cga ggt cat gtg gct gcc ctt gat tgg	792
His Leu Ala Phe Gly Gly Arg Arg Gly His Val Ala Ala Leu Asp Trp	
209 214 219 224	
gta aca aag aag ctt atg tgc gag atc aac gtc atg gag gcg gtg cgg	840
Val Thr Lys Lys Leu Met Cys Glu Ile Asn Val Met Glu Ala Val Arg	
225 230 235 240	
gac atc cgg ttt ctc cat tct gag gca ctg ctt gct gtt gct cag aac	888
Asp Ile Arg Phe Leu His Ser Glu Ala Leu Leu Ala Val Ala Gln Asn	
241 246 251 256	
cgc tgg ctc cac atc tat gac aat cag ggc att gag ctc cac tgt atc	936
Arg Trp Leu His Ile Tyr Asp Asn Gln Gly Ile Glu Leu His Cys Ile	
257 262 267 272	
cgc cgc tgt gac cga gta aca cgg ctt gag ttc ctg ccc ttc cac ttc	984
Arg Arg Cys Asp Arg Val Thr Arg Leu Glu Phe Leu Pro Phe His Phe	
273 278 283 288	
ctc ctg gct aca gct tca gaa aca ggg ttt cta acc tac ctg gat gtg	1032
Leu Leu Ala Thr Ala Ser Glu Thr Gly Phe Leu Thr Tyr Leu Asp Val	
289 294 299 304	
tca gtg ggg aag att gtg gca gct ctg aat gct cga gct ggg cgg ctc	1080
Ser Val Gly Lys Ile Val Ala Ala Leu Asn Ala Arg Ala Gly Arg Leu	
305 310 315 320	
gat gtt atg agt cag aac cct tac aat gcc gtc atc cat ctc gga cac	1128
Asp Val Met Ser Gln Asn Pro Tyr Asn Ala Val Ile His Leu Gly His	
321 326 331 336	
agc aat ggt act gtg tct tta tgg agt cca gct atg aag gag cca ctg	1176
Ser Asn Gly Thr Val Ser Leu Trp Ser Pro Ala Met Lys Glu Pro Leu	
337 342 347 352	
gca aag att ctc tgt cat cgt ggt ggg gtc cgg gct gtg gca gta gat	1224

Ala Lys Ile Leu Cys His Arg Gly Gly Val Arg Ala Val Ala Val Asp	
353 358 363 368	
tct aca ggc acg tac atg gcc acc tct ggc cta gac cac cag ctg aag	1272
Ser Thr Gly Thr Tyr Met Ala Thr Ser Gly Leu Asp His Gln Leu Lys	
369 374 379 384	
atc ttt gac ttg cga ggg acg tac cag cct ctg agc act cgg acc ctg	1320
Ile Phe Asp Leu Arg Gly Thr Tyr Gln Pro Leu Ser Thr Arg Thr Leu	
385 390 395 400	
ccc cat gga gca ggg cac ctg gcc ttc tcc cag agg gga ctg ctg gtg	1368
Pro His Gly Ala Gly His Leu Ala Phe Ser Gln Arg Gly Leu Leu Val	
401 406 411 416	
gcg gga atg ggt gac gtt gtc aac atc tgg gca ggg cag ggc aag gcc	1416
Ala Gly Met Gly Asp Val Val Asn Ile Trp Ala Gly Gln Gly Lys Ala	
417 422 427 432	
agc cca ccc tcc ctt gaa cag ccc tac ctc acc cac cgg ctc tca ggc	1464
Ser Pro Pro Ser Leu Glu Gln Pro Tyr Leu Thr His Arg Leu Ser Gly	
433 438 443 448	
cct gtg cat ggc ctt cag ttc tgc ccc ttt gaa gat gtg ctg ggg gtg	1512
Pro Val His Gly Leu Gln Phe Cys Pro Phe Glu Asp Val Leu Gly Val	
449 454 459 464	
ggg cac act ggg ggc atc acc agc atg ctg gtc cct ggg gcc ggt gag	1560
Gly His Thr Gly Gly Ile Thr Ser Met Leu Val Pro Gly Ala Gly Glu	
465 470 475 480	
ccc aac ttc gat ggc ctg gag agt aat cca tac aga agc cgg aag cag	1608
Pro Asn Phe Asp Gly Leu Glu Ser Asn Pro Tyr Arg Ser Arg Lys Gln	
481 486 491 496	
cgc cag gag tgg gag gtg aag gcc ctg cta gag aag gta cct gca gag	1656
Arg Gln Glu Trp Glu Val Lys Ala Leu Leu Glu Lys Val Pro Ala Glu	
497 502 507 512	
ctt att tgt ctg gac cca cga gcc ctg gcc gag gtg gat gtc atc tcc	1704
Leu Ile Cys Leu Asp Pro Arg Ala Leu Ala Glu Val Asp Val Ile Ser	
513 518 523 528	
ctg gag cag gga aag aag gag cag ata gag agg ctg ggc tat gac ccg	1752
Leu Glu Gln Gly Lys Lys Glu Gln Ile Glu Arg Leu Gly Tyr Asp Pro	
529 534 539 544	
cag gct aag gct ccc ttc cag cca aag cca aag cag aag ggc cgc agc	1800
Gln Ala Lys Ala Pro Phe Gln Pro Lys Pro Lys Gln Lys Gly Arg Ser	
545 550 555 560	
tcc acg gca agc ctg gtg aag agg aag agg aag gtc atg gat gag gaa	1848
Ser Thr Ala Ser Leu Val Lys Arg Lys Arg Lys Val Met Asp Glu Glu	
561 566 571 576	
cac agg gac aag gtc cgg cag agc ctt cag cag cag cat cat aag gag	1896
His Arg Asp Lys Val Arg Gln Ser Leu Gln Gln Gln His His Lys Glu	



577	582	587	592	
gcg aag gcc aag ccc acg ggg gcc cgg cca tct gcc ctg gac aga ttt				1944
Ala Lys Ala Lys Pro Thr Gly Ala Arg Pro Ser Ala Leu Asp Arg Phe				
593	598	603	608	
gtg cgc tga gccagac tccaggggtg cctgggaaca gtctctcccc aagatcacct				2000
Val Arg *				
609				
gtagggaaat gagtgttccc tggaacaagg aggtgggggc agtgtggccc cttccccaac				2060
tgggggtgga cagctgtctc ctgggggtggg ttggtattaa agaggaaagc gatttttttg				2120
aaaaaaaaa aaaagggggg gccgttttaa aggatccttg ggggggcca agtttaccg				2180
ggcatgcaac gtaatagttc tttccctata gggagccgaa ttat				2224

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<220>  
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<220>  
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atg gag aca gcc ccc aag ccg ggc aag gat gtc ccg ccc aag aaa gac	168
Met Glu Thr Ala Pro Lys Pro Gly Lys Asp Val Pro Pro Lys Lys Asp	
1 5 10 15	
aaa ctt cag acc aag aga aag aaa ccg cgg cga tac tgg gag gaa gag	216
Lys Leu Gln Thr Lys Arg Lys Lys Pro Arg Arg Tyr Trp Glu Glu Glu	
17 22 27 32	
acc gtt ccg acc aca gcc gga gcc tct cca ggg cct cct cgt aac aag	264
Thr Val Pro Thr Thr Ala Gly Ala Ser Pro Gly Pro Pro Arg Asn Lys	
33 38 43 48	
aag aat cgg gag ctc cgt cct cag aga cca aaa aat gct tac atc tta	312
Lys Asn Arg Glu Leu Arg Pro Gln Arg Pro Lys Asn Ala Tyr Ile Leu	
49 54 59 64	
aag aag tct cgg atc tct aag aag cct cag gtc ccg aag aaa ccc cga	360

Lys	Lys	Ser	Arg	Ile	Ser	Lys	Lys	Pro	Gln	Val	Pro	Lys	Lys	Pro	Arg		
65					70					75					80		
gaa	tgg	aag	aac	ccg	gag	tcc	cag	cgc	ggc	ttg	tcc	ggg	gcc	caa	gat	408	
Glu	Trp	Lys	Asn	Pro	Glu	Ser	Gln	Arg	Gly	Leu	Ser	Gly	Ala	Gln	Asp		
81					86					91					96		
cca	ttc	cca	ggc	ccc	gcc	ccc	gtc	cct	gtg	gaa	gtg	gtc	cag	aag	ttc	456	
Pro	Phe	Pro	Gly	Pro	Ala	Pro	Val	Pro	Val	Glu	Val	Val	Gln	Lys	Phe		
97					102					107					112		
tgt	cgc	att	gac	aaa	tcc	cga	aag	cta	cca	cat	tct	aaa	gcc	aaa	act	504	
Cys	Arg	Ile	Asp	Lys	Ser	Arg	Lys	Leu	Pro	His	Ser	Lys	Ala	Lys	Thr		
113					118					123					128		
cga	agc	cga	ctt	gag	gtg	gct	gaa	gct	gag	gaa	gag	gaa	aca	agt	atc	552	
Arg	Ser	Arg	Leu	Glu	Val	Ala	Glu	Ala	Glu	Glu	Glu	Glu	Thr	Ser	Ile		
129					134					139					144		
aaa	gct	gct	cgt	tct	gag	ctg	ctg	ctt	gct	gaa	gaa	cct	ggg	ttt	ctg	600	
Lys	Ala	Ala	Arg	Ser	Glu	Leu	Leu	Leu	Ala	Glu	Glu	Pro	Gly	Phe	Leu		
145					150					155					160		
gaa	ggg	gag	gat	ggg	gaa	gac	aca	gca	aag	ata	tgc	cag	gct	gac	att	648	
Glu	Gly	Glu	Asp	Gly	Glu	Asp	Thr	Ala	Lys	Ile	Cys	Gln	Ala	Asp	Ile		
161					166					171					176		
gtg	gag	gct	gtg	gac	att	gca	agt	gca	gcc	aag	cac	ttt	gac	ttg	aat	696	
Val	Glu	Ala	Val	Asp	Ile	Ala	Ser	Ala	Ala	Lys	His	Phe	Asp	Leu	Asn		
177					182					187					192		
ctg	cgg	cag	ttt	gga	ccc	tac	aga	cta	aac	tac	tct	cga	act	gga	aga	744	
Leu	Arg	Gln	Phe	Gly	Pro	Tyr	Arg	Leu	Asn	Tyr	Ser	Arg	Thr	Gly	Arg		
193					198					203					208		
cac	ctg	gct	ttt	gga	ggg	cgc	cga	ggt	cat	gtg	gct	gcc	ctt	gat	tgg	792	
His	Leu	Ala	Phe	Gly	Gly	Arg	Arg	Gly	His	Val	Ala	Ala	Leu	Asp	Trp		
209					214					219					224		
gta	aca	aag	aag	ctt	atg	tgc	gag	atc	aac	gtc	atg	gag	gcg	gtg	cgg	840	
Val	Thr	Lys	Lys	Leu	Met	Cys	Glu	Ile	Asn	Val	Met	Glu	Ala	Val	Arg		
225					230					235					240		
gac	atc	cgg	ttt	ctc	cat	tct	gag	gca	ctg	ctt	gct	gtt	gct	cag	aac	888	
Asp	Ile	Arg	Phe	Leu	His	Ser	Glu	Ala	Leu	Leu	Ala	Val	Ala	Gln	Asn		
241					246					251					256		
cgc	tgg	ctc	cac	atc	tat	gac	aat	cag	ggc	att	gag	ctc	cac	tgt	atc	936	
Arg	Trp	Leu	His	Ile	Tyr	Asp	Asn	Gln	Gly	Ile	Glu	Leu	His	Cys	Ile		
257					262					267					272		
cgc	cgc	tgt	gac	cga	gta	aca	cgg	ctt	gag	ttc	ctg	ccc	ttc	cac	ttc	984	
Arg	Arg	Cys	Asp	Arg	Val	Thr	Arg	Leu	Glu	Phe	Leu	Pro	Phe	His	Phe		
273					278					283					288		
ctc	ctg	gct	aca	gct	tca	gaa	aca	ggg	ttt	cta	acc	tac	ctg	gat	gtg	1032	
Leu	Leu	Ala	Thr	Ala	Ser	Glu	Thr	Gly	Phe	Leu	Thr	Tyr	Leu	Asp	Val		

289	294	299	304	
tca gtg ggg aag att	gtg gca gct ctg aat	gct cga gct ggg cgg ctc		1080
Ser Val Gly Lys Ile	Val Ala Ala Leu Asn	Ala Arg Ala Gly Arg Leu		
305	310	315	320	
gat gtt atg agt cag	aac cct tac aat gcc	gtc atc cat ctc gga cac		1128
Asp Val Met Ser Gln	Asn Pro Tyr Asn Ala	Val Ile His Leu Gly His		
321	326	331	336	
agc aat ggt act gtg	tct tta tgg agt cca	gct atg aag gag cca ctg		1176
Ser Asn Gly Thr Val	Ser Leu Trp Ser Pro	Ala Met Lys Glu Pro Leu		
337	342	347	352	
gca aag att ctc tgt	cat cgt ggt ggg gtc	cgg gct gtg gca gta gat		1224
Ala Lys Ile Leu Cys	His Arg Gly Gly Val	Arg Ala Val Ala Val Asp		
353	358	363	368	
tct aca ggc acg tac	atg gcc acc tct ggc	cta gac cac cag ctg aag		1272
Ser Thr Gly Thr Tyr	Met Ala Thr Ser Gly	Leu Asp His Gln Leu Lys		
369	374	379	384	
atc ttt gac ttg cga	ggg acg tac cag cct	ctg agc act cgg acc ctg		1320
Ile Phe Asp Leu Arg	Gly Thr Tyr Gln Pro	Leu Ser Thr Arg Thr Leu		
385	390	395	400	
ccc cat gga gca ggg	cac ctg gcc ttc tcc	cag agg gga ctg ctg gtg		1368
Pro His Gly Ala Gly	His Leu Ala Phe Ser	Gln Arg Gly Leu Leu Val		
401	406	411	416	
gcg gga atg ggt gac	gtt gtc aac atc tgg	gca ggg cag ggc aag gcc		1416
Ala Gly Met Gly Asp	Val Val Asn Ile Trp	Ala Gly Gln Gly Lys Ala		
417	422	427	432	
agc cca ccc tcc ctt	gaa cag ccc tac ctc	acc cac cgg ctc tca ggc		1464
Ser Pro Pro Ser Leu	Glu Gln Pro Tyr Leu	Thr His Arg Leu Ser Gly		
433	438	443	448	
cct gtg cat ggc ctt	cag ttc tgc ccc ttt	gaa gat gtg ctg ggg gtg		1512
Pro Val His Gly Leu	Gln Phe Cys Pro Phe	Glu Asp Val Leu Gly Val		
449	454	459	464	
ggg cac act ggg ggc	atc acc agc atg ctg	gtc cct ggg gcc ggt gag		1560
Gly His Thr Gly Gly	Ile Thr Ser Met Leu	Val Pro Gly Ala Gly Glu		
465	470	475	480	
ccc aac ttc gat ggc	ctg gag agt aat cca	tac aga agc cgg aag cag		1608
Pro Asn Phe Asp Gly	Leu Glu Ser Asn Pro	Tyr Arg Ser Arg Lys Gln		
481	486	491	496	
cgc cag gag tgg gag	gtg aag gcc ctg cta	gag aag gta cct gca gag		1656
Arg Gln Glu Trp Glu	Val Lys Ala Leu Leu	Glu Lys Val Pro Ala Glu		
497	502	507	512	
ctt att tgt ctg gac	cca cga gcc ctg gcc	gag gtg gat gtc atc tcc		1704
Leu Ile Cys Leu Asp	Pro Arg Ala Leu Ala	Glu Val Asp Val Ile Ser		
513	518	523	528	

ctg gag cag gga aag aag gag cag agc ctt cag cag cag cat cat aag 1752  
 Leu Glu Gln Gly Lys Lys Glu Gln Ser Leu Gln Gln His His Lys  
 529 534 539 544

gag gcg aag gcc aag ccc acg ggg gcc cgg cca tct gcc ctg gac aga 1800  
 Glu Ala Lys Ala Lys Pro Thr Gly Ala Arg Pro Ser Ala Leu Asp Arg  
 545 550 555 560

ttt gtg cgc tga gcc agactccagg gttgcctggg aacagtctct cccaagatc 1855  
 Phe Val Arg \*  
 561

acctgtaggg aaatgagtgt tccctggaac aaggaggtgg gggcagtgtg gcccttccc 1915

caactggggg tggacagctg tctcctgggg tgggttggtta ttaaagagga aagcgatttt 1975

ttggaaaaaa aaaaaaagg gggggccgtt ttaaaggatc cttggggggg cccaagttta 2035

cccgggcatg caacgtaata gttctttccc tatagggagc cgaattat 2083

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 <213> Homo sapiens

<220>  
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 <222> (496) .. (1302)

<400> 581

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caccttgggc agccgagcag agtgggtccc agcgggtctc cctccctgcc tccctgactt 240

tgcaacaccg cgttccggga ggaccggcct cggcgaggga ggaggcgggg gagctgcgaa 300

caccagacc caaacctga catgctctgg ggcggagagg aggaagccag gagctgagcg 360

cgccgcgggg gctgcttcgc cctccggtc cgagcgccgg gctccggggc cctgccctg 420

cgctgggca gcagccttgc tgggtcttggg ggcgcccccc gcttcccgcc ccgggggtcc 480

gcggccggca ggacc atg ctg ctg aaa gag tac cgg atc tgc atg ccg ctc 531

Met Leu Leu Lys Glu Tyr Arg Ile Cys Met Pro Leu  
 1 5 10

acc gta gac gag tac aaa att gga cag ctg tac atg atc agc aaa cac 579

Thr Val Asp Glu Tyr Lys Ile Gly Gln Leu Tyr Met Ile Ser Lys His  
 13 18 23 28

agc cat gaa cag agt gac cgg gga gaa ggg gtg gag gtc gtc cag aat	627
Ser His Glu Gln Ser Asp Arg Gly Glu Gly Val Glu Val Val Gln Asn	
29 34 39 44	
 gag ccc ttt gag gac cct cac cat ggc aat ggg cag ttc acc gag aag	675
Glu Pro Phe Glu Asp Pro His His Gly Asn Gly Gln Phe Thr Glu Lys	
45 50 55 60	
 cgg gtg tat ctc aac agc aaa ctg cct agt tgg gct aga gct gtt gtc	723
Arg Val Tyr Leu Asn Ser Lys Leu Pro Ser Trp Ala Arg Ala Val Val	
61 66 71 76	
 ccc aaa ata ttt tat gtg aca gag aag gct tgg aac tat tat ccc tac	771
Pro Lys Ile Phe Tyr Val Thr Glu Lys Ala Trp Asn Tyr Tyr Pro Tyr	
77 82 87 92	
 aca att aca gaa tac aca tgt tcc ttt ctg ccg aaa ttc tcc att cat	819
Thr Ile Thr Glu Tyr Thr Cys Ser Phe Leu Pro Lys Phe Ser Ile His	
93 98 103 108	
 ata gaa acc aag tat gag gac aac aaa gga agc aat gac acc att ttc	867
Ile Glu Thr Lys Tyr Glu Asp Asn Lys Gly Ser Asn Asp Thr Ile Phe	
109 114 119 124	
 gac aat gaa gcc aaa gac gtg gag aga gaa gtt tgc ttt att gat att	915
Asp Asn Glu Ala Lys Asp Val Glu Arg Glu Val Cys Phe Ile Asp Ile	
125 130 135 140	
 gcc tgc gat gaa att cca gag cgc tac tac aaa gaa tct gag gat cct	963
Ala Cys Asp Glu Ile Pro Glu Arg Tyr Tyr Lys Glu Ser Glu Asp Pro	
141 146 151 156	
 aag cac ttc aag tca gag aag aca gga cgg gga cag ttg agg gaa ggc	1011
Lys His Phe Lys Ser Glu Lys Thr Gly Arg Gly Gln Leu Arg Glu Gly	
157 162 167 172	
 tgg aga gat agt cat cag cct atc atg tgc tcc tac aag ctg gtg act	1059
Trp Arg Asp Ser His Gln Pro Ile Met Cys Ser Tyr Lys Leu Val Thr	
173 178 183 188	
 gtg aag ttt gag gtc tgg ggg ctt cag acc aga gtg gaa caa ttt gta	1107
Val Lys Phe Glu Val Trp Gly Leu Gln Thr Arg Val Glu Gln Phe Val	
189 194 199 204	
 cac aag gtg gtc cga gac att ctg ctg att gga cat aga cag gct ttt	1155
His Lys Val Val Arg Asp Ile Leu Leu Ile Gly His Arg Gln Ala Phe	
205 210 215 220	
 gca tgg gtt gat gag tgg tat gat atg aca atg gat gat gtt cgg gaa	1203
Ala Trp Val Asp Glu Trp Tyr Asp Met Thr Met Asp Asp Val Arg Glu	
221 226 231 236	
 tac gag aaa aac atg cat gaa caa acc aac ata aaa gtt tgc aat cag	1251
Tyr Glu Lys Asn Met His Glu Gln Thr Asn Ile Lys Val Cys Asn Gln	
237 242 247 252	

cat tcc tcc cct gtg gat gac ata gag agt cat gcc caa aca agt aca 1299  
His Ser Ser Pro Val Asp Asp Ile Glu Ser His Ala Gln Thr Ser Thr  
253 258 263 268

tga caat ggatgaagtc cgagaatttg aacgagccac tcaggaagcc accaacaaga 1356  
\*  
269

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attgctctaa actgt atg gtg aag ttg gcc aag ggc agg ccc cat ctt agc 171  
Met Val Lys Leu Ala Lys Gly Arg Pro His Leu Ser  
1 5 10

cag tca gta gtt gag acc ttg ttg act caa ttg cac agt gct caa gac 219  
Gln Ser Val Val Glu Thr Leu Leu Thr Gln Leu His Ser Ala Gln Asp  
13 18 23 28

gct gcc cgg att ttg atg tgc cat tgc ctg gca gcc att gcc atg caa 267  
Ala Ala Arg Ile Leu Met Cys His Cys Leu Ala Ala Ile Ala Met Gln  
29 34 39 44

ctg ccg gtg ctg ggt gat ggg atg ctt ggt gac ctc atg gag ctg tac 315  
Leu Pro Val Leu Gly Asp Gly Met Leu Gly Asp Leu Met Glu Leu Tyr  
45 50 55 60

aag gtg att gga oga tca gcc aca gac aag caa caa gaa ctt ctg gtg 363  
Lys Val Ile Gly Arg Ser Ala Thr Asp Lys Gln Gln Glu Leu Leu Val  
61 66 71 76

agt ttg gct act gtg att ttt gtt gca agt cag aag gca ttg tct gtg 411  
Ser Leu Ala Thr Val Ile Phe Val Ala Ser Gln Lys Ala Leu Ser Val

77	82	87	92	
gaa agt aag gca gta att aag cag cag ctt gaa agt gtc tcc aat gga				459
Glu Ser Lys Ala Val Ile Lys Gln Gln Leu Glu Ser Val Ser Asn Gly				
93	98	103	108	
tgg act gta tac cgt att gcc aga cag gct tcc aga atg ggt aat cat				507
Trp Thr Val Tyr Arg Ile Ala Arg Gln Ala Ser Arg Met Gly Asn His				
109	114	119	124	
gac atg gcc aaa gag ctt tat cag agt ttg ctg act cag gtt gcc tca				555
Asp Met Ala Lys Glu Leu Tyr Gln Ser Leu Leu Thr Gln Val Ala Ser				
125	130	135	140	
gaa cat ttc tac ttc tgg cta aat agt ttg aag gag ttt tca cat gca				603
Glu His Phe Tyr Phe Trp Leu Asn Ser Leu Lys Glu Phe Ser His Ala				
141	146	151	156	
gaa cag tgt ctc act ggg ttg caa gag gaa aat tat agt tca gca ctt				651
Glu Gln Cys Leu Thr Gly Leu Gln Glu Glu Asn Tyr Ser Ser Ala Leu				
157	162	167	172	
tct tgc att gct gaa tct tta aaa ttc tat cac aaa ggg att gct tcc				699
Ser Cys Ile Ala Glu Ser Leu Lys Phe Tyr His Lys Gly Ile Ala Ser				
173	178	183	188	
tta aca gca gct agt aca cca ctg aat cct tta agc ttt cag tgt gaa				747
Leu Thr Ala Ala Ser Thr Pro Leu Asn Pro Leu Ser Phe Gln Cys Glu				
189	194	199	204	
ttt gta aaa ctc agg att gac ctt tta caa gcc ttc tct caa ctt atc				795
Phe Val Lys Leu Arg Ile Asp Leu Leu Gln Ala Phe Ser Gln Leu Ile				
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tgt act tgt aat agc ctg aag aca agc cca cca cct gca att gcc aca				843
Cys Thr Cys Asn Ser Leu Lys Thr Ser Pro Pro Pro Ala Ile Ala Thr				
221	226	231	236	
aca att gcc atg acc tta gga aat gac ctc cag agg tgt ggt cgc atc				891
Thr Ile Ala Met Thr Leu Gly Asn Asp Leu Gln Arg Cys Gly Arg Ile				
237	242	247	252	
tcc aat cag atg aaa cag tcc atg gaa gaa ttt cga agc ctt gct tct				939
Ser Asn Gln Met Lys Gln Ser Met Glu Glu Phe Arg Ser Leu Ala Ser				
253	258	263	268	
cga tat gga gat ctt tac cag gca tct ttt gat gct gac tca gca act				987
Arg Tyr Gly Asp Leu Tyr Gln Ala Ser Phe Asp Ala Asp Ser Ala Thr				
269	274	279	284	
ttg agg aat gtt gaa cta cag cag cag agc tgt tta ctg ata tct cat				1035
Leu Arg Asn Val Glu Leu Gln Gln Gln Ser Cys Leu Leu Ile Ser His				
285	290	295	300	
gca ata gaa gcc ctg att ttg gat cca gaa tca gca agt ttc cag gaa				1083
Ala Ile Glu Ala Leu Ile Leu Asp Pro Glu Ser Ala Ser Phe Gln Glu				
301	306	311	316	

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Tyr Gly Ser Thr Gly Thr Ala His Ala Asp Ser Glu Tyr Glu Arg Arg	
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Met Met Ser Val Tyr Asn His Val Leu Glu Glu Val Glu Ser Leu Asn	
333 338 343 348	
cgg aaa tat acc cct gtt tct tat atg cac aca gca tgc ctc tgc aat	1227
Arg Lys Tyr Thr Pro Val Ser Tyr Met His Thr Ala Cys Leu Cys Asn	
349 354 359 364	
gcc atc att gct ttg ctg aaa gtt ccc ctt tct ttc cag aga tat ttt	1275
Ala Ile Ile Ala Leu Leu Lys Val Pro Leu Ser Phe Gln Arg Tyr Phe	
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Phe Gln Lys Leu Gln Ser Thr Ser Ile Lys Leu Ala Leu Ser Pro Ser	
381 386 391 396	
ccc cgg aat cct gca gag ccc att gct gtc cag aat aac cag cag ctg	1371
Pro Arg Asn Pro Ala Glu Pro Ile Ala Val Gln Asn Asn Gln Gln Leu	
397 402 407 412	
gcg cta aag gta gag gga gtg gtt cag cac gga tct aaa cca gga ctc	1419
Ala Leu Lys Val Glu Gly Val Val Gln His Gly Ser Lys Pro Gly Leu	
413 418 423 428	
ttc cgc aaa att cag tct gtc tgt ctg aat gtt tct tcc aca ctg cag	1467
Phe Arg Lys Ile Gln Ser Val Cys Leu Asn Val Ser Ser Thr Leu Gln	
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agt aaa tct gga caa gac tac aag ata ccc att gac aac atg acc aat	1515
Ser Lys Ser Gly Gln Asp Tyr Lys Ile Pro Ile Asp Asn Met Thr Asn	
445 450 455 460	
gag atg gag caa agg gtt gaa cct cat aat gat tac ttc agt act caa	1563
Glu Met Glu Gln Arg Val Glu Pro His Asn Asp Tyr Phe Ser Thr Gln	
461 466 471 476	
ttt ctg ttg aac ttt gct atc ctt gga aca cac aac att aca gtg gaa	1611
Phe Leu Leu Asn Phe Ala Ile Leu Gly Thr His Asn Ile Thr Val Glu	
477 482 487 492	
tct tct gtg aaa gat gcc aat ggt ata gta tgg aag act ggt ccc aga	1659
Ser Ser Val Lys Asp Ala Asn Gly Ile Val Trp Lys Thr Gly Pro Arg	
493 498 503 508	
act acc ata ttt gta aaa tcc ctg gaa gac cct tat tcc cag caa att	1707
Thr Thr Ile Phe Val Lys Ser Leu Glu Asp Pro Tyr Ser Gln Gln Ile	
509 514 519 524	
cgc tta caa cag cag caa gcc cag cag cca tta cag cag cag cag caa	1755
Arg Leu Gln Gln Gln Gln Ala Gln Gln Pro Leu Gln Gln Gln Gln Gln	
525 530 535 540	



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 Arg Asn Ala Tyr Thr Arg Phe \*  
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 Asp Ser Trp Ala Leu Ala Val Asp Glu Gln Glu Ala Ala Ala Glu Ser  
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 Leu Ser Asn Leu His Leu Lys Glu Glu Lys Ile Lys Pro Asp Thr Asn  
 20 25 30 35

ggt gct gtt gtc aag acc aat gcc aat gca gag aag aca gat gaa gaa 319  
 Gly Ala Val Val Lys Thr Asn Ala Asn Ala Glu Lys Thr Asp Glu Glu  
 36 41 46 51

gag aaa gag gac aga gct gcc cag tcc tta ctc aac aag ctg atc aga 367  
 Glu Lys Glu Asp Arg Ala Ala Gln Ser Leu Leu Asn Lys Leu Ile Arg  
 52 57 62 67

agc aac ctt gtt gat aac aca aac caa gtg gaa gtc ctg cag cgg gat	415
Ser Asn Leu Val Asp Asn Thr Asn Gln Val Glu Val Leu Gln Arg Asp	
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cca aac tcc cct ctg tac tcg gtg aag tct ttt gaa gag ctt cgg ctg	463
Pro Asn Ser Pro Leu Tyr Ser Val Lys Ser Phe Glu Glu Leu Arg Leu	
84 89 94 99	
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Lys Pro Gln Leu Leu Gln Gly Val Tyr Ala Met Gly Phe Asn Arg Pro	
100 105 110 115	
tcc aag ata caa gag aac gca ttg cca ctg atg ctt gct gag ccc cca	559
Ser Lys Ile Gln Glu Asn Ala Leu Pro Leu Met Leu Ala Glu Pro Pro	
116 121 126 131	
cag aac tta att gcc caa tct cag tct ggt act ggt aaa aca gct gcc	607
Gln Asn Leu Ile Ala Gln Ser Gln Ser Gly Thr Gly Lys Thr Ala Ala	
132 137 142 147	
ttc gtg ctg gcc atg ctt agc caa gta gaa cct gca aac aaa tac ccc	655
Phe Val Leu Ala Met Leu Ser Gln Val Glu Pro Ala Asn Lys Tyr Pro	
148 153 158 163	
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Gln Cys Leu Cys Leu Ser Pro Thr Tyr Glu Leu Ala Leu Gln Thr Gly	
164 169 174 179	
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Lys Val Ile Glu Gln Met Gly Lys Phe Tyr Pro Glu Leu Lys Leu Ala	
180 185 190 195	
tat gct gtt cga ggc aat aaa ttg gaa aga ggc cag aag atc agt gag	799
Tyr Ala Val Arg Gly Asn Lys Leu Glu Arg Gly Gln Lys Ile Ser Glu	
196 201 206 211	
cag att gtc att ggc acc cct ggg act gtg ctg gac tgg tgc tcc aag	847
Gln Ile Val Ile Gly Thr Pro Gly Thr Val Leu Asp Trp Cys Ser Lys	
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Leu Lys Phe Ile Asp Pro Lys Lys Ile Lys Val Phe Val Leu Asp Glu	
228 233 238 243	
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Ala Asp Val Met Ile Ala Thr Gln Gly His Gln Asp Gln Ser Ile Arg	
244 249 254 259	
atc cag agg atg ctg ccc agg aac tgc cag atg ctg ctt ttc tcc gcc	991
Ile Gln Arg Met Leu Pro Arg Asn Cys Gln Met Leu Leu Phe Ser Ala	
260 265 270 275	
acc ttt gaa gac tct gtg tgg aag ttt gcc cag aaa gtg gtc cca gac	1039
Thr Phe Glu Asp Ser Val Trp Lys Phe Ala Gln Lys Val Val Pro Asp	
276 281 286 291	
cca aac gtt atc aaa ctg aag cgt gag gaa gag acc ctg gac acc atc	1087

Pro Asn Val Ile Lys Leu Lys Arg Glu Glu Glu Thr Leu Asp Thr Ile	
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Lys Gln Tyr Tyr Val Leu Cys Ser Ser Arg Asp Glu Lys Phe Gln Ala	
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388 393 398 403	
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Asn Glu Thr Tyr Leu His Arg Ile Gly Arg Thr Gly Arg Phe Gly Lys	
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Arg Gly Leu Ala Val Asn Met Val Asp Ser Lys His Ser Met Asn Ile	
436 441 446 451	
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452 457 462 467	
aca gat gat ttg gac gag att gag aaa ata gcc aac tga gaagctccac	1616
Thr Asp Asp Leu Asp Glu Ile Glu Lys Ile Ala Asn *	
468 473 478	
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 Arg Ala Gln Ala Ala Lys Ala Gly Ala Pro Gly Lys Ala \*  
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 Lys Asp Leu Ser Lys Ser Met Ser Gly Arg Gln Lys Leu Glu Ala Gln  
 21 26 31 36

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 37 42 47 52

ggc gag gag gga cct gta cta gcc atg gtt ctg atc aca tat gtc cca 428  
 Gly Glu Glu Gly Pro Val Leu Ala Met Val Leu Ile Thr Tyr Val Pro  
 53 58 63 68

tcc ctc cat cag gaa ctg gcc ctg ctg gat ggg tcc aac gtg gtc ttt 476  
 Ser Leu His Gln Glu Leu Ala Leu Leu Asp Gly Ser Asn Val Val Phe  
 69 74 79 84

aaa ctt ctg ggt ccg gtg cta gtc aaa cag gag ctg ggg gag gct cgg 524  
 Lys Leu Leu Gly Pro Val Leu Val Lys Gln Glu Leu Gly Glu Ala Arg

85	90	95	100	
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Ala Thr Val Gly Lys Arg Leu Asp Tyr Ile Thr Ala Glu Ile Lys Arg				
101	106	111	116	
tac gaa tcc cag ctt cgg gat ctt gag cgg cag tca gag caa cag agg				620
Tyr Glu Ser Gln Leu Arg Asp Leu Glu Arg Gln Ser Glu Gln Gln Arg				
117	122	127	132	
gag acc ctt gct cag ctg cag cag gag ttc cag cgg gcc cag gca gca				668
Glu Thr Leu Ala Gln Leu Gln Gln Glu Phe Gln Arg Ala Gln Ala Ala				
133	138	143	148	
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Lys Ala Gly Ala Pro Gly Lys Ala *				
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Asn Cys Ser Arg Lys Lys Pro Asp Glu Phe Asn Val Cys Glu Lys Leu				
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Lys Tyr Asp Gln Lys Arg Asn Ala Ile Asn Tyr His Gln Asp Leu Ser	
47 52 57 62	
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Gln Pro Ser Phe Gly Gln Ser Phe Glu Tyr Ser Lys Asn Gly Gln Gly	
63 68 73 78	
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Phe His Asp Glu Ala Ala Phe Phe Thr Asn Lys Arg Ser Gln Ile Gly	
79 84 89 94	
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Glu Thr Val Cys Lys Tyr Asn Glu Cys Gly Arg Thr Phe Ile Glu Ser	
95 100 105 110	
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Leu Lys Leu Asn Ile Ser Gln Arg Pro His Leu Glu Met Glu Pro Tyr	
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His Gln Arg Ala Leu Thr Lys Asp Asn Pro Tyr Glu Tyr Asn Glu Tyr	
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Gly Glu Ile Phe Cys Asp Asn Ser Ala Phe Ile Ile His Gln Gly Ala	
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Val Lys Ser Asn Leu Thr Glu His Gln Arg Thr His Thr Gly Glu Lys	
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Pro Tyr Glu Cys Asn Ala Cys Gly Lys Ser Phe Cys His Arg Ser Ala	
319 324 329 334	
ctc act gtg cat cag aga aca cac aca ggg gag aaa ccg ttt ata tgt	1358
Leu Thr Val His Gln Arg Thr His Thr Gly Glu Lys Pro Phe Ile Cys	
335 340 345 350	
aat gaa tgt gga aaa tcc ttc tgt gtg aag tca aac ctc att gta cat	1406
Asn Glu Cys Gly Lys Ser Phe Cys Val Lys Ser Asn Leu Ile Val His	
351 356 361 366	
caa aga act cac act ggg gag aaa cca tat aag tgt aat gaa tgt ggg	1454
Gln Arg Thr His Thr Gly Glu Lys Pro Tyr Lys Cys Asn Glu Cys Gly	
367 372 377 382	
aaa acc ttc tgt gaa aaa tca gct ctc act aaa cat cag agg act cac	1502
Lys Thr Phe Cys Glu Lys Ser Ala Leu Thr Lys His Gln Arg Thr His	
383 388 393 398	
aca ggg gag aag ccg tat gag tgt aat gca tgt ggg aag acc ttt agt	1550
Thr Gly Glu Lys Pro Tyr Glu Cys Asn Ala Cys Gly Lys Thr Phe Ser	
399 404 409 414	
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Gln Arg Ser Val Leu Thr Lys His Gln Arg Ile His Thr Arg Val Lys	
415 420 425 430	
gct ctt tca aca tcc tga atgtta gaagccttca tacacttggtg aaattgggtta	1652
Ala Leu Ser Thr Ser *	
431 436	
tacagtttca aaaaaggaga tcagagaaaag ccaaagaatg tcagaaattt gtagaaaatg	1712
acttcttggtt tgaatatgta aaagcttttca agaaaaatta aaacttttca ttagaaaatt	1772
tgtactgagg ggaattctat tcattctaagt aatatggtga aaatatttat ctggaattta	1832
tggtggttag tggttatattc cagacgtgat accaaaattt tggtgcaaat ataattggaca	1892
atattttattt ataccatatt tcacagtgga atctgaagct tataaaagtt gaatgacagc	1952



agcattaaac atatatgtga agagtccccg atgtttgtag accttatgtg agtatgcaaa 2012  
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Met Ala Leu Arg Glu Leu Lys Val Cys Leu Leu Gly Asp Thr  
1 5 10  
ggt gta ggt aaa tcg agt att gtg tgg cgg ttt gtg gaa gac agt ttt 155  
Gly Val Gly Lys Ser Ser Ile Val Trp Arg Phe Val Glu Asp Ser Phe  
15 20 25 30  
gat cca aac atc aac cca aca ata ggg gca tct ttt atg acc aag act 203  
Asp Pro Asn Ile Asn Pro Thr Ile Gly Ala Ser Phe Met Thr Lys Thr  
31 36 41 46  
gtc cag tac caa aat gag cta cat aaa ttc cta atc tgg gat aca gct 251  
Val Gln Tyr Gln Asn Glu Leu His Lys Phe Leu Ile Trp Asp Thr Ala  
47 52 57 62

gga caa gaa cga ttt cgt gcc tta gca cca atg tac tat cga ggg tog	299
Gly Gln Glu Arg Phe Arg Ala Leu Ala Pro Met Tyr Tyr Arg Gly Ser	
63 68 73 78	
gct gca gct ata atc gtt tat gat atc aca aaa gaa gag aca ttt tca	347
Ala Ala Ala Ile Ile Val Tyr Asp Ile Thr Lys Glu Glu Thr Phe Ser	
79 84 89 94	
aca tta aag aat tgg gtg aaa gag ctt cga cag cat ggc cca cct aat	395
Thr Leu Lys Asn Trp Val Lys Glu Leu Arg Gln His Gly Pro Pro Asn	
95 100 105 110	
att gta gtt gcc att gca gga aat aaa tgt gat ctt atc gat gta aga	443
Ile Val Val Ala Ile Ala Gly Asn Lys Cys Asp Leu Ile Asp Val Arg	
111 116 121 126	
gaa gtc atg gag aga gat gca aag gac tac gcc gac tct att cat gca	491
Glu Val Met Glu Arg Asp Ala Lys Asp Tyr Ala Asp Ser Ile His Ala	
127 132 137 142	
att ttt gta gag acc agc gca aaa aac gcg ata aac ata aat gaa ctc	539
Ile Phe Val Glu Thr Ser Ala Lys Asn Ala Ile Asn Ile Asn Glu Leu	
143 148 153 158	
ttt ata gaa att agt cga aga att cca tcc act gac gcc aac ctg cca	587
Phe Ile Glu Ile Ser Arg Arg Ile Pro Ser Thr Asp Ala Asn Leu Pro	
159 164 169 174	
tct ggc ggt aag ggc ttc aaa ctc cga aga cag cct tca gag cca aag	635
Ser Gly Gly Lys Gly Phe Lys Leu Arg Arg Gln Pro Ser Glu Pro Lys	
175 180 185 190	
cgg agc tgc tgc tga ccgaacctca gcctctcaga cttgatgatg aagtaggtgg	690
Arg Ser Cys Cys *	
191	
tcctgaaagt taacaggagg gctgggggtcc ctgccaccag ttttcaccta gccagtcttg	750
agtcttctcc gtgcaaaaag gattcacaga aatggaccag ttctgttctc caaagactgc	810
agcaatgata tttcagtctg tgaacttcta ttatgtaaag aatctctagt gtacaaaggg	870
actacatcgt tggcttttga ccttgctgaa aaggaacata taattgtatg gatggtagga	930
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gcacttttgt ggttcttaag ggaaaagaaa cagaccttgt ggagattata atttccttgg	1050
tttctgttac cactgttaga gggagttgta tcatttnaca tatagtagga tagtttaagt	1110
gtagggagga caattattgt ctgaagctaa aatgggttat ttataggact gatggaaatg	1170
atctcatctc tgccatctct aaagcacttt tcattgaaca tgtagccta ggatacgtac	1230
agtaaattaa caatgatagc agcagatgcc tagctcatcc tgggtttgct tctgaccttg	1290
tcatgtgtgt gccaccaaac acgttattgg ccccttttta aataagctct catgatcaag	1350

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ttttttttaa cccaagtatt ttgggtggga aaagcaagta tctattgctt agcatatgta 1530  
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caaggaagta tgccgagatt ttgctgtcct ggaggaccac accctggctc acagcctgca 180  
ggaacaagag attgagcatc atttggcatc gaacgttcag cggaaccgtt tggctcagca 240  
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ccttttgcaa gaaaaggagt tacaggaaga gaaaaagaga aagaaacact ttccagagtt 480  
ccctgcaacc cgtgcttatg cagatagtta ctattatgaa gatggaggaa tgaagccaag 540  
agtgatgaaa gaagctgtat ctactccatc acga atg gcc cac agg gat cag 592  
Met Ala His Arg Asp Gln

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gaa tgg tat gat gct gaa att gcc aga aaa ctg caa gaa gaa gaa ctt 640  
Glu Trp Tyr Asp Ala Glu Ile Ala Arg Lys Leu Gln Glu Glu Glu Leu  
7 12 17 22  
ttg gct acc cag gtg gac atg aga gcc gct caa gta gct caa gat gaa 688  
Leu Ala Thr Gln Val Asp Met Arg Ala Ala Gln Val Ala Gln Asp Glu  
23 28 33 38  
gaa atc gct cga ctt cta atg gct gaa gaa aag aaa gct tac aaa aaa 736  
Glu Ile Ala Arg Leu Leu Met Ala Glu Glu Lys Lys Ala Tyr Lys Lys  
39 44 49 54

gcc aag gag cgg gag aaa tca tct ttg gac aaa aga aag caa gac ccc 784  
 Ala Lys Glu Arg Glu Lys Ser Ser Leu Asp Lys Arg Lys Gln Asp Pro  
 55 60 65 70  
 gag tgg aag cca aaa aca gct aaa gca gca aat tca aag tca aaa gag 832  
 Glu Trp Lys Pro Lys Thr Ala Lys Ala Ala Asn Ser Lys Ser Lys Glu  
 71 76 81 86  
 agt gat gaa cct cac cat tct aag aat gaa agg cca gca cgg cca cca 880  
 Ser Asp Glu Pro His His Ser Lys Asn Glu Arg Pro Ala Arg Pro Pro  
 87 92 97 102  
 cca cct atc atg aca gat ggt gaa gat gcg gat tac<sup>3</sup> act cat ttt aca 928  
 Pro Pro Ile Met Thr Asp Gly Glu Asp Ala Asp Tyr Thr His Phe Thr  
 103 108 113 118  
 aac cag cag agt tcc aca cgg cat ttc tca aaa tca gag tcc tct cat 976  
 Asn Gln Gln Ser Ser Thr Arg His Phe Ser Lys Ser Glu Ser Ser His  
 119 124 129 134  
 aaa ggt ttt cat tac aaa cat taa aaacctagga atctgccttg aaaatggact 1030  
 Lys Gly Phe His Tyr Lys His \*  
 135 140  
 cactatagca aatattactg ggtgatacag aatgaattct acacttactt tttttctcct 1090  
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 actgccattt tgtaggtat ggagtttggg atctaggag taggccttat ttagcaattc 1330  
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 gaatataaga aatagctttt tgttgcatta atgtatgata ttttgaagga cagagccttt 1450  
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Met Ser Gly Leu

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gtg ttg ggg cag cgg gat gag cct gca ggc cac cgg ctc agc caa gag	161
Val Leu Gly Gln Arg Asp Glu Pro Ala Gly His Arg Leu Ser Gln Glu	
5 10 15 20	
gag atc ctg ggg agc aca cgg ctg gtc agc caa ggg cta gag gcc cta	209
Glu Ile Leu Gly Ser Thr Arg Leu Val Ser Gln Gly Leu Glu Ala Leu	
21 26 31 36	
cgc agt gaa cac cag gcc gtg ctg caa agc ctg tcc cag acc att gag	257
Arg Ser Glu His Gln Ala Val Leu Gln Ser Leu Ser Gln Thr Ile Glu	
37 42 47 52	
tgt ctg cag cag gga ggc cat gag gaa ggg ctg gtg cat gag aag gcc	305
Cys Leu Gln Gln Gly Gly His Glu Glu Gly Leu Val His Glu Lys Ala	
53 58 63 68	
cgg cag ctt cgc cgt tct atg gaa aac att gag ctc ggg ctg agt gag	353
Arg Gln Leu Arg Arg Ser Met Glu Asn Ile Glu Leu Gly Leu Ser Glu	
69 74 79 84	
gcc cag gtg atg ctg gct cta gcc agc cac ctg agc aca gtg gag tcg	401
Ala Gln Val Met Leu Ala Leu Ala Ser His Leu Ser Thr Val Glu Ser	
85 90 95 100	
gag aaa cag aag ctg cgg gct cag gtg cgg cgg cta tgc cag gag aac	449
Glu Lys Gln Lys Leu Arg Ala Gln Val Arg Arg Leu Cys Gln Glu Asn	
101 106 111 116	
cag tgg ctg cgg gat gag ctg gct ggc acc cag cag cgg cta cag cgc	497
Gln Trp Leu Arg Asp Glu Leu Ala Gly Thr Gln Gln Arg Leu Gln Arg	
117 122 127 132	
agt gaa cag gct gtg gct cag ctg gag gag gaa aag aag cac ctg gag	545
Ser Glu Gln Ala Val Ala Gln Leu Glu Glu Glu Lys Lys His Leu Glu	
133 138 143 148	
ttc ctg ggg cag ctg cgg cag tat gat gag gat gga cat acc tcg gag	593
Phe Leu Gly Gln Leu Arg Gln Tyr Asp Glu Asp Gly His Thr Ser Glu	
149 154 159 164	
gag aaa gaa ggc gat gcc acc aag gat tcc ctg gat gac ctc ttt cct	641
Glu Lys Glu Gly Asp Ala Thr Lys Asp Ser Leu Asp Asp Leu Phe Pro	
165 170 175 180	
aat gag gag gaa gag gac ccc agc aat ggc ttg tcc cgt ggt caa ggt	689
Asn Glu Glu Glu Glu Asp Pro Ser Asn Gly Leu Ser Arg Gly Gln Gly	
181 186 191 196	
gct aca gca gct cag cag ggt gga tat gag atc cca gca agg ttg cgg	737
Ala Thr Ala Ala Gln Gln Gly Gly Tyr Glu Ile Pro Ala Arg Leu Arg	
197 202 207 212	
acg ttg cac aac ctg gtg atc cag tac gca gcc caa ggt cgc tat gag	785
Thr Leu His Asn Leu Val Ile Gln Tyr Ala Ala Gln Gly Arg Tyr Glu	

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Ser Gly Arg Gly His Pro Asp Val Ala Thr Met Leu Asn Ile Leu Ala				
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Asn Asp Ala Leu Ser Ile Arg Glu Ser Thr Leu Gly Pro Asp His Pro				
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gct gtg gct gcc aca ctc aac aat ttg gct gtg ctc tat ggc aaa agg				1025
Ala Val Ala Ala Thr Leu Asn Asn Leu Ala Val Leu Tyr Gly Lys Arg				
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ggc aag tac aag gag gca gag cct ctg tgc cag cgg gca ctg gag att				1073
Gly Lys Tyr Lys Glu Ala Glu Pro Leu Cys Gln Arg Ala Leu Glu Ile				
309	314	319	324	
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Arg Glu Lys Val Leu Gly Thr Asn His Pro Asp Val Ala Lys Gln Leu				
325	330	335	340	
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gaa cgc tac tac cag cga gca ctg gcc atc tac gag ggg cag ctg ggg				1217
Glu Arg Tyr Tyr Gln Arg Ala Leu Ala Ile Tyr Glu Gly Gln Leu Gly				
357	362	367	372	
ccg gac aac cct aat gta gcc cgg acc aag aac aac ctg gct tcc tgt				1265
Pro Asp Asn Pro Asn Val Ala Arg Thr Lys Asn Asn Leu Ala Ser Cys				
373	378	383	388	
tac ctg aaa cag ggc aaa tat gct gag gct gag aca cta tac aaa gag				1313
Tyr Leu Lys Gln Gly Lys Tyr Ala Glu Ala Glu Thr Leu Tyr Lys Glu				
389	394	399	404	
atc ctg acc cgt gcc cat gta cag gag ttt ggg tct gtg gat gat gac				1361
Ile Leu Thr Arg Ala His Val Gln Glu Phe Gly Ser Val Asp Asp Asp				
405	410	415	420	
cac aag ccc atc tgg atg cat gca gag gag cgg gag gaa atg agc aaa				1409
His Lys Pro Ile Trp Met His Ala Glu Glu Arg Glu Glu Met Ser Lys				
421	426	431	436	
agc cgg cac cat gag ggt ggg aca ccc tat gct gag tat gga ggc tgg				1457
Ser Arg His His Glu Gly Gly Thr Pro Tyr Ala Glu Tyr Gly Gly Trp				
437	442	447	452	

tac aag gcc tgc aaa gtg agc agc ccc aca gtg aac act act ctg aga	1505
Tyr Lys Ala Cys Lys Val Ser Ser Pro Thr Val Asn Thr Thr Leu Arg	
453 458 463 468	
aac ctg gga gct ctg tat agg cgc cag gga aag ctg gag gct gct gag	1553
Asn Leu Gly Ala Leu Tyr Arg Arg Gln Gly Lys Leu Glu Ala Ala Glu	
469 474 479 484	
acc ctg gag gaa tgt gcc ctg cgg tcc cgg aga cag ggc act gac cct	1601
Thr Leu Glu Glu Cys Ala Leu Arg Ser Arg Arg Gln Gly Thr Asp Pro	
485 490 495 500	
atc agc cag acg aaa gca gct gac att caa ccc ggc ccc cag gtc tgc	1649
Ile Ser Gln Thr Lys Ala Ala Asp Ile Gln Pro Gly Pro Gln Val Cys	
501 506 511 516	
tgg tcc ccc gtc ccc cac agc cct cac agc att ccc cat tgc tcc tgg	1697
Trp Ser Pro Val Pro His Ser Pro His Ser Ile Pro His Cys Ser Trp	
517 522 527 532	
ctc ttc ctc tcc cct agg tgg gac agt gaa ggg gag cag ttt aac cag	1745
Leu Phe Leu Ser Pro Arg Trp Asp Ser Glu Gly Glu Gln Phe Asn Gln	
533 538 543 548	
aag att gct gct gcc ctt agg gtc tca gct ccc tcc tct gga atc cct	1793
Lys Ile Ala Ala Ala Leu Arg Val Ser Ala Pro Ser Ser Gly Ile Pro	
549 554 559 564	
ctt agg aag gac cct cag gac acc ctc tct gca ccc tgt ggt cct cta	1841
Leu Arg Lys Asp Pro Gln Asp Thr Leu Ser Ala Pro Cys Gly Pro Leu	
565 570 575 580	
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gggagaccta ccatagaagt tcgaagatgt agc atg cct tct gtc att tgt gaa	174
Met Pro Ser Val Ile Cys Glu	
1 5	
cat acc aaa caa ttc caa aca ata tca gaa gag agc aat caa ggt agc	222
His Thr Lys Gln Phe Gln Thr Ile Ser Glu Glu Ser Asn Gln Gly Ser	
8 13 18 23	
tta tta act gtg cca gga gat act agt cct tct ccc aaa cct gag gta	270
Leu Leu Thr Val Pro Gly Asp Thr Ser Pro Ser Pro Lys Pro Glu Val	
24 29 34 39	
ttc tca aat gtg cct gaa aga gac ctt tca aat gta tct aac ata cat	318
Phe Ser Asn Val Pro Glu Arg Asp Leu Ser Asn Val Ser Asn Ile His	
40 45 50 55	
tcc agt ttt gca act tct cca act gga gct tca aac agc aag tat gtt	366
Ser Ser Phe Ala Thr Ser Pro Thr Gly Ala Ser Asn Ser Lys Tyr Val	
56 61 66 71	
tca gct gat aga aat ctc atc aag aat act gcc cca gtg aac act gta	414
Ser Ala Asp Arg Asn Leu Ile Lys Asn Thr Ala Pro Val Asn Thr Val	
72 77 82 87	
atg gac agt cca gtg cat tta gag cca tct agt cag gtt ggt gtg atc	462
Met Asp Ser Pro Val His Leu Glu Pro Ser Ser Gln Val Gly Val Ile	
88 93 98 103	
cag aat aaa tca tgg gag atg cct gtt gat aga cta gag aca tta agc	510
Gln Asn Lys Ser Trp Glu Met Pro Val Asp Arg Leu Glu Thr Leu Ser	
104 109 114 119	
acc aga gac ttt atc tgc cca aat tct aac ata cct gat caa gaa tcc	558
Thr Arg Asp Phe Ile Cys Pro Asn Ser Asn Ile Pro Asp Gln Glu Ser	
120 125 130 135	
tct ctt cag agt ttt tgt aat tct gaa aat aag gta ttg aaa gaa aat	606
Ser Leu Gln Ser Phe Cys Asn Ser Glu Asn Lys Val Leu Lys Glu Asn	
136 141 146 151	
gct gat ttt tta tcc ctg cgc cag act gaa ctg cca gga aac tct tgt	654
Ala Asp Phe Leu Ser Leu Arg Gln Thr Glu Leu Pro Gly Asn Ser Cys	
152 157 162 167	
gct cag gat ccg gca tcc ttt atg cct cca cag cag cct tgc tct ttc	702
Ala Gln Asp Pro Ala Ser Phe Met Pro Pro Gln Gln Pro Cys Ser Phe	
168 173 178 183	
ccc agc caa tca ctt tca gat gct gaa tcg att tct aaa cat atg tct	750
Pro Ser Gln Ser Leu Ser Asp Ala Glu Ser Ile Ser Lys His Met Ser	
184 189 194 199	
ttg tca tat gtt gct aat caa gag cca ggt att tta caa caa aaa aat	798
Leu Ser Tyr Val Ala Asn Gln Glu Pro Gly Ile Leu Gln Gln Lys Asn	

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gca gtt cag att att agt tct gct tta gat act gat aat gaa tct aca				846
Ala Val Gln Ile Ile Ser Ser Ala Leu Asp Thr Asp Asn Glu Ser Thr				
216	221	226	231	
aaa gat aca gaa aat act ttt gtc cta gga gat gtt caa aaa aca gat				894
Lys Asp Thr Glu Asn Thr Phe Val Leu Gly Asp Val Gln Lys Thr Asp				
232	237	242	247	
gcc ttt gtc cca gtg tac tct gac agc act att caa gaa gca tca cca				942
Ala Phe Val Pro Val Tyr Ser Asp Ser Thr Ile Gln Glu Ala Ser Pro				
248	253	258	263	
aac ttt gag aaa gct tat act tta cct gtg tta cca tca gaa aag gac				990
Asn Phe Glu Lys Ala Tyr Thr Leu Pro Val Leu Pro Ser Glu Lys Asp				
264	269	274	279	
ttt aat gga agt gat gcc tct acc cag cta aat aca cat tat gca ttt				1038
Phe Asn Gly Ser Asp Ala Ser Thr Gln Leu Asn Thr His Tyr Ala Phe				
280	285	290	295	
agc aaa cta act tac aag tct tcc agt ggc cat gaa gtt gag aat agc				1086
Ser Lys Leu Thr Tyr Lys Ser Ser Ser Gly His Glu Val Glu Asn Ser				
296	301	306	311	
aca act gat act cag gtc att tca cat gaa aaa gaa aac aaa ctg gag				1134
Thr Thr Asp Thr Gln Val Ile Ser His Glu Lys Glu Asn Lys Leu Glu				
312	317	322	327	
agt ttg gtt tta act cat ttg agt agg tgt gat tct gat tta tgt gaa				1182
Ser Leu Val Leu Thr His Leu Ser Arg Cys Asp Ser Asp Leu Cys Glu				
328	333	338	343	
atg aat gca ggg atg cca aaa gga aac cta aat gaa caa gat cca aaa				1230
Met Asn Ala Gly Met Pro Lys Gly Asn Leu Asn Glu Gln Asp Pro Lys				
344	349	354	359	
cat tgt cct gaa agt gaa aag tgt ttg ctt tcc ata gaa gat gag gaa				1278
His Cys Pro Glu Ser Glu Lys Cys Leu Leu Ser Ile Glu Asp Glu Glu				
360	365	370	375	
tct caa caa agc att tta tca agt ctg gaa aac cat tca cag cag tca				1326
Ser Gln Gln Ser Ile Leu Ser Ser Leu Glu Asn His Ser Gln Gln Ser				
376	381	386	391	
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Thr Gln Pro Glu Met His Lys Tyr Gly Gln Leu Val Lys Val Glu Leu				
392	397	402	407	
gaa gaa aat gcc gaa gat gat aaa act gaa aac caa atc cct caa aga				1422
Glu Glu Asn Ala Glu Asp Asp Lys Thr Glu Asn Gln Ile Pro Gln Arg				
408	413	418	423	
atg act aga aac aaa gca aat aca atg gca aat caa agc aaa cag att				1470
Met Thr Arg Asn Lys Ala Asn Thr Met Ala Asn Gln Ser Lys Gln Ile				
424	429	434	439	



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Thr Ser Val Arg Asp Arg Phe Asn Ala Arg Gln Phe Met Ser Trp Leu	
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Gln Asp Val Asp Asp Lys Phe Asp Lys Leu Lys Thr Cys Leu Leu Met	
680 685 690 695	
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Arg Gln Gln His Glu Ala Ala Ala Leu Asn Ala Val Gln Arg Leu Glu	
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gtg ccc cac ccc aag aag cca ggc cac atc cta gtt ctg ctg gac acc	523					
Val Pro His Pro Lys Lys Pro Gly His Ile Leu Val Leu Leu Asp Thr						
83 88 93 98						
gag ggt ctg gga gat gta gag aag ggt gac aac cag aat gac tcc tgg	571					
Glu Gly Leu Gly Asp Val Glu Lys Gly Asp Asn Gln Asn Asp Ser Trp						
99 104 109 114						
atc ttc gcc ctg gcc gtc ctc ctg agc agc acc ttc gtg tac aat agc	619					
Ile Phe Ala Leu Ala Val Leu Leu Ser Ser Thr Phe Val Tyr Asn Ser						
115 120 125 130						
ata gga acc atc aac cag cag gct atg gac caa ctg tac tat gtg aca	667					
Ile Gly Thr Ile Asn Gln Gln Ala Met Asp Gln Leu Tyr Tyr Val Thr						
131 136 141 146						

gag ctg aca cat aga atc cga tca aaa tcc tca cct gat gag aat gag	715
Glu Leu Thr His Arg Ile Arg Ser Lys Ser Ser Pro Asp Glu Asn Glu	
147 152 157 162	
aat gag gtt gag gat tca gct gac ttt gtg agc ttc ttc cca gac ttt	763
Asn Glu Val Glu Asp Ser Ala Asp Phe Val Ser Phe Phe Pro Asp Phe	
163 168 173 178	
gtg tgg aca ctg aga gat ttc tcc ctg gac ttg gaa gca gat gga caa	811
Val Trp Thr Leu Arg Asp Phe Ser Leu Asp Leu Glu Ala Asp Gly Gln	
179 184 189 194	
ccc ctc aca cca gat gag tac ctg aca tac tcc ctg aag ctg aag aaa	859
Pro Leu Thr Pro Asp Glu Tyr Leu Thr Tyr Ser Leu Lys Leu Lys Lys	
195 200 205 210	
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Gly Thr Ser Gln Lys Asp Glu Thr Phe Asn Leu Pro Arg Leu Cys Ile	
211 216 221 226	
cgg aaa ttc ttc cca aag aaa aaa tgc ttt gtc ttt gat cgg ccc gtt	955
Arg Lys Phe Phe Pro Lys Lys Lys Cys Phe Val Phe Asp Arg Pro Val	
227 232 237 242	
cac cgc agg aag ctt gcc cag ctc gag aaa cta caa gat gaa gag ctg	1003
His Arg Arg Lys Leu Ala Gln Leu Glu Lys Leu Gln Asp Glu Glu Leu	
243 248 253 258	
gac ccc gaa ttt gtg caa caa gta gca gac ttc tgt tcc tac atc ttt	1051
Asp Pro Glu Phe Val Gln Gln Val Ala Asp Phe Cys Ser Tyr Ile Phe	
259 264 269 274	
agt aat tcc aaa act aaa act ctt tca gga ggc atc cag gtc aac ggg	1099
Ser Asn Ser Lys Thr Lys Thr Leu Ser Gly Gly Ile Gln Val Asn Gly	
275 280 285 290	
cct cgt cta gag agc ctg gtg ctg acc tac gtc aat gcc atc agc agt	1147
Pro Arg Leu Glu Ser Leu Val Leu Thr Tyr Val Asn Ala Ile Ser Ser	
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ggg gat ctg ccg tgc atg gag aac gca gtc ctg gcc ttg gcc cag ata	1195
Gly Asp Leu Pro Cys Met Glu Asn Ala Val Leu Ala Leu Ala Gln Ile	
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gag aac tca gct gca gtg caa aag gct att gcc cac tat gaa cag cag	1243
Glu Asn Ser Ala Ala Val Gln Lys Ala Ile Ala His Tyr Glu Gln Gln	
323 328 333 338	
atg ggc cag aag gtg cag ctg ccc aca gaa acc ctc cag gag ctg ctg	1291
Met Gly Gln Lys Val Gln Leu Pro Thr Glu Thr Leu Gln Glu Leu Leu	
339 344 349 354	
gac ctg cac agg gac agt gag aga gag gcc att gaa gtc ttc atc agg	1339
Asp Leu His Arg Asp Ser Glu Arg Glu Ala Ile Glu Val Phe Ile Arg	
355 360 365 370	
agt tcc ttc aaa gat gtg gac cat cta ttt caa aag gag tta gcg gcc	1387

Ser	Ser	Phe	Lys	Asp	Val	Asp	His	Leu	Phe	Gln	Lys	Glu	Leu	Ala	Ala		
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Gln	Leu	Glu	Lys	Lys	Arg	Asp	Asp	Phe	Cys	Lys	Gln	Asn	Gln	Glu	Ala		
387					392					397					402		
tca	tca	gat	cgt	tgc	tca	gct	tta	ctt	cag	gtc	att	ttc	agt	cct	cta	1483	
Ser	Ser	Asp	Arg	Cys	Ser	Ala	Leu	Leu	Gln	Val	Ile	Phe	Ser	Pro	Leu		
403					408					413					418		
gaa	gaa	gaa	gtg	aag	gcg	gga	att	tat	tcg	aaa	cca	ggg	ggc	tat	cgt	1531	
Glu	Glu	Glu	Val	Lys	Ala	Gly	Ile	Tyr	Ser	Lys	Pro	Gly	Gly	Tyr	Arg		
419					424					429					434		
ctc	ttt	gtt	cag	aag	cta	caa	gac	ctg	aag	aaa	aag	tac	tat	gag	gaa	1579	
Leu	Phe	Val	Gln	Lys	Leu	Gln	Asp	Leu	Lys	Lys	Lys	Tyr	Tyr	Glu	Glu		
435					440					445					450		
ccg	agg	aag	ggg	ata	cag	gct	gaa	gag	att	ctg	cag	aca	tac	ttg	aaa	1627	
Pro	Arg	Lys	Gly	Ile	Gln	Ala	Glu	Glu	Ile	Leu	Gln	Thr	Tyr	Leu	Lys		
451					456					461					466		
tcc	aag	gag	tct	atg	act	gat	gca	att	ctc	cag	aca	gac	cag	act	ctc	1675	
Ser	Lys	Glu	Ser	Met	Thr	Asp	Ala	Ile	Leu	Gln	Thr	Asp	Gln	Thr	Leu		
467					472					477					482		
aca	gaa	aaa	gaa	aag	gag	att	gaa	gtg	gaa	cgt	gtg	aaa	gct	gag	tct	1723	
Thr	Glu	Lys	Glu	Lys	Glu	Ile	Glu	Val	Glu	Arg	Val	Lys	Ala	Glu	Ser		
483					488					493					498		
gca	cag	gct	tca	gca	aaa	atg	ttg	cag	gaa	atg	caa	aga	aag	aat	gag	1771	
Ala	Gln	Ala	Ser	Ala	Lys	Met	Leu	Gln	Glu	Met	Gln	Arg	Lys	Asn	Glu		
499					504					509					514		
cag	atg	atg	gaa	cag	aag	gag	agg	agt	tat	cag	gaa	cac	ttg	aaa	caa	1819	
Gln	Met	Met	Glu	Gln	Lys	Glu	Arg	Ser	Tyr	Gln	Glu	His	Leu	Lys	Gln		
515					520					525					530		
ctg	act	gag	aag	atg	gag	aac	gac	agg	gtc	cag	ttg	ctg	aaa	gag	caa	1867	
Leu	Thr	Glu	Lys	Met	Glu	Asn	Asp	Arg	Val	Gln	Leu	Leu	Lys	Glu	Gln		
531					536					541					546		
gag	agg	acc	ctc	gct	ctt	aaa	ctt	cag	gaa	cag	gag	caa	cta	cta	aaa	1915	
Glu	Arg	Thr	Leu	Ala	Leu	Lys	Leu	Gln	Glu	Gln	Glu	Gln	Leu	Leu	Lys		
547					552					557					562		
gag	gga	ttt	caa	aaa	gaa	agc	aga	ata	atg	aaa	aat	gag	ata	cag	gat	1963	
Glu	Gly	Phe	Gln	Lys	Glu	Ser	Arg	Ile	Met	Lys	Asn	Glu	Ile	Gln	Asp		
563					568					573					578		
ctc	cag	acg	aaa	atg	aga	cga	cga	aag	gca	tgt	acc	ata	agc	taa	aga	2011	
Leu	Gln	Thr	Lys	Met	Arg	Arg	Arg	Lys	Ala	Cys	Thr	Ile	Ser	*			
579					584					589							
ccagagcctt	cctgtcaccc	ctaaccaagg	cataattgaa	acaatttttag	aatttggaac											2071	



aagcgctcact acatttgata ataattagat cttgcatcat aacaccaaaa gtttataaag 2131  
gcattgtggta caatgatcaa aatcatgttt tttcttaaaa aaaaaaaaaa gactgtaaat 2191  
tgtgcaacaa agatgcattt acctctgtat caactcagga aatttaataa gctggtagca 2251  
ctcaggagaa gtttattctt ccagatgacc agcagtagac aaatggatac tgagcagagt 2311  
cttaggtaaa agtcttggga aatatttggg cattggctctg gccaaagtcta caatgtocca 2371  
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aaggggtgaa ataaaagtcc agcgatccag cgaaagaaaa gagaagtgac agaaacaact 180

ttacctggac tgaagataaa agcacagaca agagaacaat gccctggac atg gct 235  
Met Ala  
1

cca gag atc cac atg aca ggc cca atg tgc ctc att gag aac act aat 283  
Pro Glu Ile His Met Thr Gly Pro Met Cys Leu Ile Glu Asn Thr Asn  
3 8 13 18

ggg gaa ctg gtg gcg aat cca gaa gct ctg aaa atc ctg tct gcc att 331  
Gly Glu Leu Val Ala Asn Pro Glu Ala Leu Lys Ile Leu Ser Ala Ile  
19 24 29 34

aca cag cct gtg gtg gtg gca att gtg ggc ctc tac cgc aca gga 379  
Thr Gln Pro Val Val Val Val Ala Ile Val Gly Leu Tyr Arg Thr Gly  
35 40 45 50

aaa tcc tac ctg atg aac aag cta gct ggg aag aaa aag ggc ttc tct 427  
Lys Ser Tyr Leu Met Asn Lys Leu Ala Gly Lys Lys Lys Gly Phe Ser  
51 56 61 66

ctg ggc tcc acg gtg cag tct cac act aaa gga atc tgg atg tgg tgt 475  
Leu Gly Ser Thr Val Gln Ser His Thr Lys Gly Ile Trp Met Trp Cys  
67 72 77 82

gtg ccc cac ccc aag aag cca ggc cac atc cta gtt ctg ctg gac acc 523  
Val Pro His Pro Lys Lys Pro Gly His Ile Leu Val Leu Leu Asp Thr

83	88	93	98	
gag ggt ctg gga gat	gta gag aag ggt gac	aac cag aat gac tcc tgg		571
Glu Gly Leu Gly Asp	Val Glu Lys Gly Asp	Asn Gln Asn Asp Ser Trp		
99	104	109	114	
atc ttc gcc ctg gcc gtc	ctc ctg agc agc acc	ttc gtg tac aat agc		619
Ile Phe Ala Leu Ala Val	Leu Leu Ser Ser Thr	Phe Val Tyr Asn Ser		
115	120	125	130	
ata gga acc atc aac cag	cag gct atg gac caa	ctg tac tat gtg aca		667
Ile Gly Thr Ile Asn Gln	Gln Ala Met Asp Gln	Leu Tyr Tyr Val Thr		
131	136	141	146	
gag ctg aca cat aga atc	cga tca aaa tcc tca	cct gat gag aat gag		715
Glu Leu Thr His Arg Ile	Arg Ser Lys Ser Ser	Pro Asp Glu Asn Glu		
147	152	157	162	
aat gag gtt gag gat tca	gct gac ttt gtg agc	ttc ttc cca gac ttt		763
Asn Glu Val Glu Asp Ser	Ala Asp Phe Val Ser	Phe Phe Pro Asp Phe		
163	168	173	178	
gtg tgg aca ctg aga gat	ttc tcc ctg gac ttg	gaa gca gat gga caa		811
Val Trp Thr Leu Arg Asp	Phe Ser Leu Asp Leu	Glu Ala Asp Gly Gln		
179	184	189	194	
ccc ctc aca cca ggt acc	agt caa aaa gat gaa	act ttt aac ctg ccc		859
Pro Leu Thr Pro Gly Thr	Ser Gln Lys Asp Glu	Thr Phe Asn Leu Pro		
195	200	205	210	
aga ctc tgt atc cgg aaa	ttc ttc cca aag aaa	aaa tgc ttt gtc ttt		907
Arg Leu Cys Ile Arg Lys	Phe Phe Pro Lys Lys	Lys Cys Phe Val Phe		
211	216	221	226	
gat cgg ccc gtt cac cgc	agg aag ctt gcc cag	ctc gag aaa cta caa		955
Asp Arg Pro Val His Arg	Arg Lys Leu Ala Gln	Leu Glu Lys Leu Gln		
227	232	237	242	
gat gaa gag ctg gac ccc	gaa ttt gtg caa caa	gta gca gac ttc tgt		1003
Asp Glu Glu Leu Asp Pro	Glu Phe Val Gln Gln	Val Ala Asp Phe Cys		
243	248	253	258	
tcc tac atc ttt agt aat	tcc aaa act aaa act	ctt tca gga ggc atc		1051
Ser Tyr Ile Phe Ser Asn	Ser Lys Thr Lys Thr	Leu Ser Gly Gly Ile		
259	264	269	274	
cag gtc aac ggg cct cgt	cta gag agc ctg gtg	ctg acc tac gtc aat		1099
Gln Val Asn Gly Pro Arg	Leu Glu Ser Leu Val	Leu Thr Tyr Val Asn		
275	280	285	290	
gcc atc agc agt ggg gat	ctg ccg tgc atg gag	aac gca gtc ctg gcc		1147
Ala Ile Ser Ser Gly Asp	Leu Pro Cys Met Glu	Asn Ala Val Leu Ala		
291	296	301	306	
ttg gcc cag ata gag aac	tca gct gca gtg caa	aag gct att gcc cac		1195
Leu Ala Gln Ile Glu Asn	Ser Ala Ala Val Gln	Lys Ala Ile Ala His		
307	312	317	322	

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tat gaa cag cag atg ggc cag aag gtg cag ctg ccc aca gaa acc ctc Tyr Glu Gln Gln Met Gly Gln Lys Val Gln Leu Pro Thr Glu Thr Leu 323 328 333 338	1243
cag gag ctg ctg gac ctg cac agg gac agt gag aga gag gcc att gaa Gln Glu Leu Leu Asp Leu His Arg Asp Ser Glu Arg Glu Ala Ile Glu 339 344 349 354	1291
gtc ttc atc agg agt tcc ttc aaa gat gtg gac cat cta ttt caa aag Val Phe Ile Arg Ser Ser Phe Lys Asp Val Asp His Leu Phe Gln Lys 355 360 365 370	1339
gag tta gcg gcc cag cta gaa aaa aag cgg gat gac ttt tgt aaa cag Glu Leu Ala Ala Gln Leu Glu Lys Lys Arg Asp Asp Phe Cys Lys Gln 371 376 381 386	1387
aat cag gaa gca tca tca gat cgt tgc tca gct tta ctt cag gtc att Asn Gln Glu Ala Ser Ser Asp Arg Cys Ser Ala Leu Leu Gln Val Ile 387 392 397 402	1435
ttc agt cct cta gaa gaa gaa gtg aag gcg gga att tat tcg aaa cca Phe Ser Pro Leu Glu Glu Glu Val Lys Ala Gly Ile Tyr Ser Lys Pro 403 408 413 418	1483
ggg ggc tat cgt ctc ttt gtt cag aag cta caa gac ctg aag aaa aag Gly Gly Tyr Arg Leu Phe Val Gln Lys Leu Gln Asp Leu Lys Lys Lys 419 424 429 434	1531
tac tat gag gaa ccg agg aag ggg ata cag gct gaa gag att ctg cag Tyr Tyr Glu Glu Pro Arg Lys Gly Ile Gln Ala Glu Glu Ile Leu Gln 435 440 445 450	1579
aca tac ttg aaa tcc aag gag tct atg act gat gca att ctc cag aca Thr Tyr Leu Lys Ser Lys Glu Ser Met Thr Asp Ala Ile Leu Gln Thr 451 456 461 466	1627
gac cag act ctc aca gaa aaa gaa aag gag att gaa gtg gaa cgt gtg Asp Gln Thr Leu Thr Glu Lys Glu Lys Glu Ile Glu Val Glu Arg Val 467 472 477 482	1675
aaa gct gag tct gca cag gct tca gca aaa atg ttg cag gaa atg caa Lys Ala Glu Ser Ala Gln Ala Ser Ala Lys Met Leu Gln Glu Met Gln 483 488 493 498	1723
aga aag aat gag cag atg atg gaa cag aag gag agg agt tat cag gaa Arg Lys Asn Glu Gln Met Met Glu Gln Lys Glu Arg Ser Tyr Gln Glu 499 504 509 514	1771
cac ttg aaa caa ctg act gag aag atg gag aac gac agg gtc cag ttg His Leu Lys Gln Leu Thr Glu Lys Met Glu Asn Asp Arg Val Gln Leu 515 520 525 530	1819
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gga att ggc cta gat ggc atc cca gag gtt aca gct tca gaa gga ttt				289
Gly Ile Gly Leu Asp Gly Ile Pro Glu Val Thr Ala Ser Glu Gly Phe				
77	82	87	92	
act gtg aat gaa ata aac aag aaa agc att cat att tca tgt cca aag				337
Thr Val Asn Glu Ile Asn Lys Lys Ser Ile His Ile Ser Cys Pro Lys				
93	98	103	108	
gaa aat gca tct tct aag ttt ttg gca cca tat act act ttt tcc aga				385
Glu Asn Ala Ser Ser Lys Phe Leu Ala Pro Tyr Thr Thr Phe Ser Arg				
109	114	119	124	
att cat aca aag agt ata aca tgc ctg gac att tcc agc aga gga ggt				433
Ile His Thr Lys Ser Ile Thr Cys Leu Asp Ile Ser Ser Arg Gly Gly				
125	130	135	140	
ctt ggt gtg tct tct agt act gac ggg acc atg aaa atc tgg cag gct				481
Leu Gly Val Ser Ser Ser Thr Asp Gly Thr Met Lys Ile Trp Gln Ala				
141	146	151	156	
tcc aat gga gaa ctc agg aga gta ttg gaa gga cat gtg ttt gat gtg				529
Ser Asn Gly Glu Leu Arg Arg Val Leu Glu Gly His Val Phe Asp Val				
157	162	167	172	
aat tgt tgc agg ttt ttc cca tca ggc ctt gtg gtc ctg agt ggg gga				577
Asn Cys Cys Arg Phe Phe Pro Ser Gly Leu Val Val Leu Ser Gly Gly				
173	178	183	188	
atg gat gcc cag ctg aag ata tgg tca gct gaa gat gct agc tgc gtg				625
Met Asp Ala Gln Leu Lys Ile Trp Ser Ala Glu Asp Ala Ser Cys Val				
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gtg acc ttc aaa ggt cac aaa gga ggt atc ctg gat aca gcc atc gtt				673
Val Thr Phe Lys Gly His Lys Gly Gly Ile Leu Asp Thr Ala Ile Val				
205	210	215	220	
gat cgg ggg agg aat gtg gtg tct gct tct cga gat ggg aca gca cga				721
Asp Arg Gly Arg Asn Val Val Ser Ala Ser Arg Asp Gly Thr Ala Arg				
221	226	231	236	
ctt tgg gat tgt ggg cgc tca gcc tgc ttg gga gtc ctt gca gat tgt				769
Leu Trp Asp Cys Gly Arg Ser Ala Cys Leu Gly Val Leu Ala Asp Cys				
237	242	247	252	
ggg tct tct atc aat gga gtg gcg gtg ggt gct gct gac aac tcc ata				817
Gly Ser Ser Ile Asn Gly Val Ala Val Gly Ala Ala Asp Asn Ser Ile				
253	258	263	268	
aac ctt ggc tcc cct gag cag atg ccc agt gaa cgg gag gtt gga aca				865
Asn Leu Gly Ser Pro Glu Gln Met Pro Ser Glu Arg Glu Val Gly Thr				
269	274	279	284	
gag gcc aaa atg/ctg ctc ttg gcc cgg gaa gat aag aaa ctt cag tgc				913
Glu Ala Lys Met Leu Leu Leu Ala Arg Glu Asp Lys Lys Leu Gln Cys				
285	290	295	300	

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Leu Gly Leu Gln Ser Arg Gln Leu Val Phe Leu Phe Ile Gly Ser Asp	
301 306 311 316	
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Ala Phe Asn Cys Cys Thr Phe Leu Ser Gly Phe Leu Leu Leu Ala Gly	
317 322 327 332	
act caa gat gga aac att tat cag ctg gat gtg agg agt cca agg gct	1057
Thr Gln Asp Gly Asn Ile Tyr Gln Leu Asp Val Arg Ser Pro Arg Ala	
333 338 343 348	
ccg gta caa gtc atc cac aga tca gga gca cca gtt cta tcc ctg cta	1105
Pro Val Gln Val Ile His Arg Ser Gly Ala Pro Val Leu Ser Leu Leu	
349 354 359 364	
agt gtc aga gat gga ttc att gct agc caa ggt gat gga agc tgt ttt	1153
Ser Val Arg Asp Gly Phe Ile Ala Ser Gln Gly Asp Gly Ser Cys Phe	
365 370 375 380	
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Ile Val Gln Gln Asp Leu Asp Tyr Val Thr Glu Leu Thr Gly Ala Asp	
381 386 391 396	
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Cys Asp Pro Val Tyr Lys Val Ala Thr Trp Glu Lys Gln Ile Tyr Thr	
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Cys Cys Arg Asp Gly Leu Val Arg Arg Tyr Gln Leu Ser Asp Leu *	
413 418 423 428	
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Met Met Lys Lys Asn Asn

1

tcc gcc aag cgg gga cct cag gat gga aac cag cag cct gca ccg ccc 162  
Ser Ala Lys Arg Gly Pro Gln Asp Gly Asn Gln Gln Pro Ala Pro Pro  
7 12 17 22

gag aag gtc ggc tgg gtc cgg aaa ttc tgc ggg aaa ggg att ttc agg 210  
Glu Lys Val Gly Trp Val Arg Lys Phe Cys Gly Lys Gly Ile Phe Arg  
23 28 33 38

gag att tgg aaa aac cgc tat gtg gtg ctg aaa ggg gac cag ctc tac 258  
Glu Ile Trp Lys Asn Arg Tyr Val Val Leu Lys Gly Asp Gln Leu Tyr  
39 44 49 54

atc tct gag aag gag gta aaa gat gag aaa aat att caa gag gta ttt 306  
Ile Ser Glu Lys Glu Val Lys Asp Glu Lys Asn Ile Gln Glu Val Phe  
55 60 65 70

gac ctg agt gac tat gag aag tgt gaa gag ctc cgg aag tcc aag agc 354  
Asp Leu Ser Asp Tyr Glu Lys Cys Glu Glu Leu Arg Lys Ser Lys Ser  
71 76 81 86

agg agc aag aaa aat cat agc aag ttt act ctt gcc cac tcc aaa cag 402  
Arg Ser Lys Lys Asn His Ser Lys Phe Thr Leu Ala His Ser Lys Gln  
87 92 97 102

ccc ggt aac acg gca ccc aac ctg atc ttc ctg gca gtg agt cca gaa 450  
Pro Gly Asn Thr Ala Pro Asn Leu Ile Phe Leu Ala Val Ser Pro Glu  
103 108 113 118

gag aag gaa tcg aca ggc acc caa cct gat ctt cct ggc agt gag tcc 498  
Glu Lys Glu Ser Thr Gly Thr Gln Pro Asp Leu Pro Gly Ser Glu Ser  
119 124 129 134

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Ser Gln Glu Pro Tyr Leu Gly \*  
151 156

gaacgctggg gcagagggaa cagctgtgac ccaactgaagg gggaggattg tgcaggcccc 660

gttttatccg ctccttcac cagcgtact tctttnaccc acccttttaa aagccctgat 720

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 <222> (76) .. (1314)

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gcc gag ggc acc acc tgc tgc ctc gag gtc act gcc cag cag gag gag 159
Ala Glu Gly Thr Thr Cys Cys Leu Glu Val Thr Ala Gln Gln Glu Glu
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Lys Gln Glu Asp Ala Ala Ile Cys Pro Val Thr Val Leu Pro Glu Glu
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Glu Thr Phe Gly His Leu Val Ser Val Gly Trp Glu Thr Thr Leu Glu	
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Asn Lys Glu Leu Ala Pro Asn Ser Asp Ile Pro Glu Glu Glu Pro Ala	
93 98 103 108	
ccc agc ctg aaa gta caa gaa tcc tca agg gat tgt gcc ttg tcc tct	447
Pro Ser Leu Lys Val Gln Glu Ser Ser Arg Asp Cys Ala Leu Ser Ser	
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Thr Leu Glu Asp Thr Leu Gln Gly Gly Val Gln Glu Val Gln Asp Thr	
125 130 135 140	
gtg ttg aag cag atg gag tct gct cag gaa aaa gac ctt cct cag aag	543
Val Leu Lys Gln Met Glu Ser Ala Gln Glu Lys Asp Leu Pro Gln Lys	
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Lys His Phe Asp Asn Arg Glu Ser Gln Ala Asn Ser Gly Ala Leu Asp	
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Thr Asn Gln Val Ser Leu Gln Lys Ile Asp Asn Pro Glu Ser Gln Ala	
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Asn Ser Gly Ala Leu Asp Thr Asn Gln Val Leu Leu His Lys Ile Pro	
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cct aga aaa cga ttg cgc aaa cgt gac tca caa gtt aaa agt atg aaa	735
Pro Arg Lys Arg Leu Arg Lys Arg Asp Ser Gln Val Lys Ser Met Lys	
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cat aat tca cgt gta aaa att cat cag aag agc tgt gaa agg caa aag	783
His Asn Ser Arg Val Lys Ile His Gln Lys Ser Cys Glu Arg Gln Lys	
221 226 231 236	
gcc aag gaa ggc aat ggt tgt agg aaa acc ttc agt cgg agt act aaa	831
Ala Lys Glu Gly Asn Gly Cys Arg Lys Thr Phe Ser Arg Ser Thr Lys	
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Gln Ile Thr Phe Ile Arg Ile His Lys Gly Ser Gln Val Cys Arg Cys	
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agt gaa tgt ggt aaa ata ttc cgg aac cca aga tac ttt tct gtg cat	927
Ser Glu Cys Gly Lys Ile Phe Arg Asn Pro Arg Tyr Phe Ser Val His	
269 274 279 284	
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Lys Lys Ile His Thr Gly Glu Arg Pro Tyr Val Cys Gln Asp Cys Gly	
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aaa gga ttt gtt cag agc tct tcc ctc aca cag cat cag aga gtt cat	1023
Lys Gly Phe Val Gln Ser Ser Ser Leu Thr Gln His Gln Arg Val His	
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tct gga gag aga cca ttt gaa tgt cag gag tgt ggg agg acc ttc aat	1071
Ser Gly Glu Arg Pro Phe Glu Cys Gln Glu Cys Gly Arg Thr Phe Asn	
317 322 327 332	
gat cgc tca gcc atc tcc cag cac ctg agg act cac act ggc gct aag	1119
Asp Arg Ser Ala Ile Ser Gln His Leu Arg Thr His Thr Gly Ala Lys	
333 338 343 348	
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Pro Tyr Lys Cys Gln Asp Cys Gly Lys Ala Phe Arg Gln Ser Ser His	
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ctc atc aga cat cag agg act cac acc ggg gag cgc cca tat gca tgc	1215
Leu Ile Arg His Gln Arg Thr His Thr Gly Glu Arg Pro Tyr Ala Cys	
365 370 375 380	
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Asn Lys Cys Gly Lys Ala Phe Thr Gln Ser Ser His Leu Ile Gly His	
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Gln Arg Thr His Asn Arg Thr Lys Arg Lys Lys Lys Gln Pro Thr Ser	
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tgc cag gcc tgg aag gat gcg agg ctc ccg ctc tcc acc aca agc aac      158
Cys Gln Ala Trp Lys Asp Ala Arg Leu Pro Leu Ser Thr Thr Ser Asn
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gaa gcc tgc aag ctg ttc gat gcc acg ctg acc cag tat gta aaa tgg      206
Glu Ala Cys Lys Leu Phe Asp Ala Thr Leu Thr Gln Tyr Val Lys Trp
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acc aat gac aag agt ctc ggt ggc atc gag ggc tgc ctg tca aag ctc      254
Thr Asn Asp Lys Ser Leu Gly Gly Ile Glu Gly Cys Leu Ser Lys Leu
  42                               47                               52                               57

aaa gca gca gat cca acc ttt gtg atg ggc cac gcc atg gct act ggc      302
Lys Ala Ala Asp Pro Thr Phe Val Met Gly His Ala Met Ala Thr Gly
  58                               63                               68                               73

ctt gtg ctg att ggc act gga agc tcc gtg aag ctg gac aaa gag ctg      350
Leu Val Leu Ile Gly Thr Gly Ser Ser Val Lys Leu Asp Lys Glu Leu
  74                               79                               84                               89

gac ctg gct gtg aag aca atg gtg gag att tca aga acc cag ccg ctg      398
Asp Leu Ala Val Lys Thr Met Val Glu Ile Ser Arg Thr Gln Pro Leu
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aca agg cgg gag cag ctg cac gtg tct gca gta gag aca ttt gcc aat      446
Thr Arg Arg Glu Gln Leu His Val Ser Ala Val Glu Thr Phe Ala Asn
  106                               111                               116                               121

ggg aac ttt ccg aaa gcc tgt gaa cta tgg gaa cag att ctc cag gac      494
Gly Asn Phe Pro Lys Ala Cys Glu Leu Trp Glu Gln Ile Leu Gln Asp
  122                               127                               132                               137

cac ccg aca gac atg ttg gcc ctg aaa ttt tcc cat gat gct tat ttt      542
His Pro Thr Asp Met Leu Ala Leu Lys Phe Ser His Asp Ala Tyr Phe
  138                               143                               148                               153

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ccc ttc tgg aca cct gac atc ccc cta agc agc tat gtg aaa ggc atc	638
Pro Phe Trp Thr Pro Asp Ile Pro Leu Ser Ser Tyr Val Lys Gly Ile	
170 175 180 185	
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Tyr Ser Phe Gly Leu Met Glu Thr Asn Phe Tyr Asp Gln Ala Glu Lys	
186 191 196 201	
ctc gcc aaa gag gct tta tct att aac ccg aca gac gca tgg tcg gtg	734
Leu Ala Lys Glu Ala Leu Ser Ile Asn Pro Thr Asp Ala Trp Ser Val	
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cac acc gtc gct cac atc cac gag atg aaa gca gag atc aag gat ggg	782
His Thr Val Ala His Ile His Glu Met Lys Ala Glu Ile Lys Asp Gly	
218 223 228 233	
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Leu Glu Phe Met Gln His Ser Glu Thr Leu Trp Lys Asp Ser Asp Met	
234 239 244 249	
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Leu Ala Cys His Asn Tyr Trp His Trp Ala Leu Tyr Leu Ile Glu Lys	
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ggc gaa tat gag gcc gcg ctg acc atc tac gat acc cac atc ctt ccc	926
Gly Glu Tyr Glu Ala Ala Leu Thr Ile Tyr Asp Thr His Ile Leu Pro	
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Ser Leu Gln Ala Asn Asp Ala Met Leu Asp Val Val Asp Ser Cys Ser	
282 287 292 297	
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Met Leu Tyr Arg Leu Gln Met Glu Gly Val Ser Val Gly Gln Arg Trp	
298 303 308 313	
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Gln Asp Val Leu Pro Val Ala Arg Lys His Ser Arg Asp His Ile Leu	
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Leu Phe Asn Asp Ala His Phe Leu Met Ala Ser Leu Gly Ala His Asp	
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Pro Gln Thr Thr Gln Glu Leu Leu Thr Thr Leu Arg Asp Ala Ser Glu	
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Gly	Ser	Asn	Ala	Gln	Arg	Asp	Val	Phe	Asn	Gln	Leu	Leu	Ile	His	Ala	
410					415					420					425	
gcc	tta	aac	tgc	acc	tcc	agc	gtc	cat	aag	aac	gta	gcc	cga	ggc	aag	1406
Ala	Leu	Asn	Cys	Thr	Ser	Ser	Val	His	Lys	Asn	Val	Ala	Arg	Gly	Lys	
426					431					436					441	
gtc	tca	ctc	ggt	cat	cca	ggt	tgg	aat	gca	gtg	gtg	tga	tcacagttca			1455
Val	Ser	Leu	Gly	His	Pro	Gly	Trp	Asn	Ala	Val	Val	*				
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Met Lys Phe Gln  
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Tyr Lys Glu Asp His Pro Phe Glu Tyr Arg Lys Lys Glu Gly Glu Lys  
5 10 15 20

atc cgg aag aaa tat ccg gac agg gtc ccc gtg att gta gag aag gct 389  
Ile Arg Lys Lys Tyr Pro Asp Arg Val Pro Val Ile Val Glu Lys Ala  
21 26 31 36

cca aaa gcc agg gtg cct gat ctg gac aag agg aag tac cta gtg ccc 437  
Pro Lys Ala Arg Val Pro Asp Leu Asp Lys Arg Lys Tyr Leu Val Pro  
37 42 47 52

tct gac ctt act gtt ggc cag ttc tac ttc tta atc cgg aag aga atc 485  
Ser Asp Leu Thr Val Gly Gln Phe Tyr Phe Leu Ile Arg Lys Arg Ile  
53 58 63 68

cac ctg aga cct gag gac gcc tta ttc ttc ttt gtc aac aac acc atc 533  
His Leu Arg Pro Glu Asp Ala Leu Phe Phe Phe Val Asn Asn Thr Ile  
69 74 79 84

cct ccc acc agt gct acc atg ggc caa ctg tat gag gac aat cat gag 581  
Pro Pro Thr Ser Ala Thr Met Gly Gln Leu Tyr Glu Asp Asn His Glu  
85 90 95 100

gaa gac tat ttt ctg tat gtg gcc tac agt gat gag agt gtc tat ggg 629  
Glu Asp Tyr Phe Leu Tyr Val Ala Tyr Ser Asp Glu Ser Val Tyr Gly  
101 106 111 116

aaa tga gtggttgaa gccagcaga tgggagcacc tggacttggg ggtaggggag 685  
Lys \*  
117

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gcagtttcat agatgggtca ggaggtggac aagttggggc cagagatgat ggcagtccag 985

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acgcctccgc cgcgcctga ggaggcagc tatccgggag ttacaccgcc accgccagg 179  
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Met Asp Arg Met Thr Glu Asp Ala Leu Arg Leu Asn Leu Leu Lys Arg  
1 5 10 15  
agc ttg gac cca gca gat gag cga gat gat gtc ctg gca aag cga ctc 275  
Ser Leu Asp Pro Ala Asp Glu Arg Asp Asp Val Leu Ala Lys Arg Leu  
17 22 27 32  
aaa atg gag ggg cat gag gcc atg gaa cgt ctg aaa atg ttg gca ttg 323  
Lys Met Glu Gly His Glu Ala Met Glu Arg Leu Lys Met Leu Ala Leu  
33 / 38 43 48  
ctc aaa agg aag gat ttg gca aat ctt gag gtg cca cat gag tta ccc 371

Leu Lys Arg Lys Asp Leu Ala Asn Leu Glu Val Pro His Glu Leu Pro	
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Thr Lys Gln Asp Gly Ser Gly Val Lys Gly Tyr Glu Glu Lys Leu Asn	
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Gly Asn Leu Arg Pro His Gly Asp Asn Arg Thr Ala Gly Arg Pro Gly	
81 86 91 96	
aaa gaa aac atc aat gat gag cct gtg gat atg agt gct aga cgg agt	515
Lys Glu Asn Ile Asn Asp Glu Pro Val Asp Met Ser Ala Arg Arg Ser	
97 102 107 112	
gag cca gag cga gga agg cta act ccc tca cca gac atc att gtt ttg	563
Glu Pro Glu Arg Gly Arg Leu Thr Pro Ser Pro Asp Ile Ile Val Leu	
113 118 123 128	
tct gac aat gag gct tcc agt ccc cgt tcc agt tcc aga atg gaa gaa	611
Ser Asp Asn Glu Ala Ser Ser Pro Arg Ser Ser Ser Arg Met Glu Glu	
129 134 139 144	
aga ctc aaa gca gcc aac tta gag atg ttt aag ggg aaa ggc att gag	659
Arg Leu Lys Ala Ala Asn Leu Glu Met Phe Lys Gly Lys Gly Ile Glu	
145 150 155 160	
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Glu Arg Gln Gln Leu Ile Lys Gln Leu Arg Asp Glu Leu Arg Leu Glu	
161 166 171 176	
gaa gcc cga ctg gtc ctg tta aag aaa ctg aga cag agt cag cta cag	755
Glu Ala Arg Leu Val Leu Leu Lys Lys Leu Arg Gln Ser Gln Leu Gln	
177 182 187 192	
aaa gag aat gtg gtc cag aag act cca gtt gta cag aat gca gca tct	803
Lys Glu Asn Val Val Gln Lys Thr Pro Val Val Gln Asn Ala Ala Ser	
193 198 203 208	
att gtt cag cca tct cct gcc cat gtg gga cag cag ggc cta tct aag	851
Ile Val Gln Pro Ser Pro Ala His Val Gly Gln Gln Gly Leu Ser Lys	
209 214 219 224	
ctt ccc tct cgg cct ggg gcc caa ggg gtt gaa cct caa aat ttg aga	899
Leu Pro Ser Arg Pro Gly Ala Gln Gly Val Glu Pro Gln Asn Leu Arg	
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Thr Leu Gln Gly His Ser Val Ile Arg Ser Ala Thr Asn Thr Thr Leu	
241 246 251 256	
cca cac atg ttg atg tct caa cgt gtt att gca cca aac cca gcc cag	995
Pro His Met Leu Met Ser Gln Arg Val Ile Ala Pro Asn Pro Ala Gln	
257 262 267 272	
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Leu Gln Gly Gln Arg Gly Pro Pro Lys Pro Gly Leu Val Arg Thr Thr	



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Thr Pro Asn Met Asn Pro Ala Ile Asn Tyr Gln Pro Gln Ser Ser Ser				
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tct gtt cca tgt cag cgt aca aca tcc tct gcc atc tat atg aac ctt				1139
Ser Val Pro Cys Gln Arg Thr Thr Ser Ser Ala Ile Tyr Met Asn Leu				
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Ala Ser His Ile Gln Pro Gly Thr Val Asn Arg Val Ser Ser Pro Leu				
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Pro Ser Pro Ser Ala Met Thr Asp Ala Ala Asn Ser Gln Ala Ala Ala				
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Lys Leu Ala Leu Arg Lys Gln Leu Glu Lys Thr Leu Leu Glu Ile Pro				
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Pro Pro Lys Pro Pro Ala Pro Leu Leu His Phe Leu Pro Ser Ala Ala				
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Asn Ser Glu Phe Ile Tyr Met Val Gly Leu Glu Glu Val Val Gln Ser				
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Val Ile Asp Ser Gln Gly Lys Ser Cys Ala Ser Leu Leu Arg Val Glu				
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Pro Phe Val Cys Ala Gln Cys Arg Thr Asp Phe Thr Pro His Trp Lys				
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caa gaa aag aat ggt aag att cta tgt gag cag tgt atg acc tcc aac				1523
Gln Glu Lys Asn Gly Lys Ile Leu Cys Glu Gln Cys Met Thr Ser Asn				
433	438	443	448	
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Gln Lys Lys Ala Leu Lys Ala Glu His Thr Asn Arg Leu Lys Asn Ala				
449	454	459	464	
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Phe Val Lys Ala Leu Gln Gln Glu Gln Val Arg Ile Leu Thr Ala His				
465	470	475	480	
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Trp Pro Pro Val Pro Val Cys Phe Phe Gln Arg Val Ala Pro Ser Ser				
481	486	491	496	
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Leu Gln Glu Trp Phe Met *				
497	502			

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ggtgactctt ggggccgaag gggacggacg tcctcccacg taccatttag aagaa atg 178
Met
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2 7 12 17

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Glu Ala Tyr Lys Lys Ala Phe Leu Phe Val Asn Lys Gly Leu Asn Thr
18 23 28 33

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Asp Glu Leu Gly Gln Lys Glu Glu Ala Lys Asn Tyr Tyr Lys Gln Gly
34 39 44 49

ata gga cac ctg ctg aga ggg atc agc att tca tca aaa gag tct gaa 370
Ile Gly His Leu Leu Arg Gly Ile Ser Ile Ser Ser Lys Glu Ser Glu
50 55 60 65

cac aca ggt cct ggg tgg gaa tct gct aga cag atg caa cag aaa atg 418
His Thr Gly Pro Gly Trp Glu Ser Ala Arg Gln Met Gln Gln Lys Met
66 71 76 81

aaa gaa act cta cag aat gta cgc acc agg ctg gaa att cta gag aag 466

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Gly	Leu	Ala	Thr	Ser	Leu	Gln	Asn	Asp	Leu	Gln	Glu	Val	Pro	Lys	Leu		
98					103					108					113		
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Tyr	Pro	Glu	Phe	Pro	Pro	Lys	Asp	Met	Cys	Glu	Lys	Leu	Pro	Glu	Pro		
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Phe	Ser	Ser	Val	Gly	Glu	Glu	Phe	Tyr	Arg	Asn	His	Ser	Gln	Pro	Pro		
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Asn Trp Asn Arg Ala Glu Glu Glu Asn Glu Phe Gln Ile Pro Gly Arg				
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Thr Arg Pro Ser Ser Asp Gln Leu Lys Glu Ala Ser Gly Thr Asp Val				
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Lys Gln Leu Asp Gln Gly Asn Lys Asp Val Arg His Lys Gly Lys Arg				
370	375	380	385	
gga aaa agg gct aaa gat act tca agt gaa gaa gtt aac ctg agt cac				1378
Gly Lys Arg Ala Lys Asp Thr Ser Ser Glu Glu Val Asn Leu Ser His				
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Ile Val Pro Cys Glu Pro Val Pro Glu Glu Lys Pro Lys Glu Leu Pro				
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Glu Trp Ser Glu Lys Val Ala His Asn Ile Leu Ser Gly Ala Ser Trp				
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Val Ser Trp Gly Leu Val Lys Gly Ala Glu Ile Thr Gly Lys Ala Ile				
434	439	444	449	
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Gln Lys Gly Ala Ser Lys Leu Arg Glu Arg Ile Gln Pro Glu Glu Lys				
450	455	460	465	
ccc gtg gaa gtt agt cca gct gtc acc aag gga ctt tat ata gcg aag				1618
Pro Val Glu Val Ser Pro Ala Val Thr Lys Gly Leu Tyr Ile Ala Lys				
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Val Cys Thr Val Ala Asn Cys Val Gly Lys Glu Leu Ala Pro His Val				
498	503	508	513	
aag aag cat gga agc aaa ctt gtt cca gaa tct ctt aaa aaa gac aaa				1762
Lys Lys His Gly Ser Lys Leu Val Pro Glu Ser Leu Lys Lys Asp Lys				
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Asp Gly Lys Ser Pro Leu Asp Gly Ala Met Val Val Ala Ala Ser Ser				
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Cys Ile Val Asn Asn Val Ser Ala Glu Thr Val Gln Thr Val Arg Tyr	
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Lys Tyr Gly Tyr Asn Ala Gly Glu Ala Thr His His Ala Val Asp Ser	
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Ala Val Asn Val Gly Val Thr Ala Tyr Asn Ile Asn Asn Ile Gly Ile	
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aaa gca atg gtg aag aaa act gca aca caa aca gga cac act ctc ctt	2050
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Ala Val Gly Ala Phe Leu Ile Tyr Ile Ser Ser Asp Tyr Val Phe Asp				
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Gly Thr Asn Pro Pro Tyr Arg Glu Glu Asp Ile Pro Ala Pro Leu Asn				
131	136	141	146	
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Thr Leu Gly Ile Gly Gln Arg Thr Pro Phe Arg Ile Gly Ile Lys Glu	
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Ser Leu Trp Pro Phe Leu Ile Asp Lys Arg Trp Arg Gln Thr Val Phe	
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His *	
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caa atc caa cat ttg caa gaa caa gcc agg aag gta ctg gaa gat gct Gln Ile Gln His Leu Gln Glu Gln Ala Arg Lys Val Leu Glu Asp Ala 84 89 94 99	345
cac aga gat gcc aac ctg cac cat gta gct tgt aat ata gtg aaa aaa His Arg Asp Ala Asn Leu His His Val Ala Cys Asn Ile Val Lys Lys 100 105 110 115	393
cct ggc aac att tac tat ctc tat aaa cgg gag agt ggt cag cag tat Pro Gly Asn Ile Tyr Tyr Leu Tyr Lys Arg Glu Ser Gly Gln Gln Tyr 116 121 126 131	441
ttt tcc atc att tct cca aag gaa tgg ggg aca agt tgt cca cat gac Phe Ser Ile Ile Ser Pro Lys Glu Trp Gly Thr Ser Cys Pro His Asp 132 137 142 147	489
ttc ctt ggt gcc tac aaa cta cag cat gac ttg tcc tgg act ccg tat Phe Leu Gly Ala Tyr Lys Leu Gln His Asp Leu Ser Trp Thr Pro Tyr 148 153 158 163	537
gag gac att gag aag caa gat gct aaa atc agc atg atg gac acg ttg Glu Asp Ile Glu Lys Gln Asp Ala Lys Ile Ser Met Met Asp Thr Leu 164 169 174 179	585
cta agc cag tca gtg gcc ctg cct ccg tgc act gaa ccc aac ttc cag Leu Ser Gln Ser Val Ala Leu Pro Pro Cys Thr Glu Pro Asn Phe Gln 180 185 190 195	633
gga ctg act cac tga gagtgggctt tgacaaacag ctctcacagg acctggctgt Gly Leu Thr His * 196	688
caacctcctt gttgccccca ctgttgccctt gagaattgaa gacatgtagg tgactcacia	748

acttcttggga aagagaccct gtgtgaatgt aaaaaaaaaa aa

790

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ggtgagggaa ggtgcgacct gaatgttctc cctgacctcc tagtttccta gtcttgcaacg	180
ttctattctt cccaggggtca cattcaccac acccaccac tcctgtcatt cccttccctt	240
tcaccccttc tgtctcattt agctccactt tgaaaaaact gtggcatcaa aggtccctgg	300
gtagtccctt cccaaatggg ccgctgcctg gaactctaaa tgccaccctg gagcggggagc	360
cgca atg gca cgg cag cac gcc cgg acc ttg tgg tac gac agg ccc agg	409
Met Ala Arg Gln His Ala Arg Thr Leu Trp Tyr Asp Arg Pro Arg	
1 5 10	
tat gtg ttc atg gag ttt tgt gtt gag gac agc acc gat gtc cac gtg	457
Tyr Val Phe Met Glu Phe Cys Val Glu Asp Ser Thr Asp Val His Val	
16 21 26 31	
ctt att gag gat cac cgc att gtg ttc agc tgc aag aat gcc gat gga	505
Leu Ile Glu Asp His Arg Ile Val Phe Ser Cys Lys Asn Ala Asp Gly	
32 37 42 47	
gtg gag ttg tac aat gag att gag ttc tat gcc aaa gtg aac tcc aag	553
Val Glu Leu Tyr Asn Glu Ile Glu Phe Tyr Ala Lys Val Asn Ser Lys	
48 53 58 63	
gac tcc cag gat aag cgc tct tcc cgc tct att act tgt ttt gtg aga	601
Asp Ser Gln Asp Lys Arg Ser Ser Arg Ser Ile Thr Cys Phe Val Arg	
64 69 74 79	
aaa tgg aag gaa aag gtg gcc tgg ccg cgg ctt acc aag gag gat atc	649
Lys Trp Lys Glu Lys Val Ala Trp Pro Arg Leu Thr Lys Glu Asp Ile	
80 85 90 95	
aag cca gtg tgg ctg tct gtg gac ttt gat aac tgg aga gac tgg gaa	697
Lys Pro Val Trp Leu Ser Val Asp Phe Asp Asn Trp Arg Asp Trp Glu	
96 101 106 111	
ggg gat gaa gag atg gag ctg gct cat gtg gaa cat tat gca gag ctt	745
Gly Asp Glu Glu Met Glu Leu Ala His Val Glu His Tyr Ala Glu Leu	

112	117	122	127	
ttg aag aag gtc agc acc aag aga cct cca cct gcc atg gat gat ttg				793
Leu Lys Lys Val Ser Thr Lys Arg Pro Pro Pro Ala Met Asp Asp Leu				
128	133	138	143	
gat gat gat tct gac agt gct gat gat gca aca agt aat taa ctttctg				842
Asp Asp Asp Ser Asp Ser Ala Asp Asp Ala Thr Ser Asn *				
144	149	154		
tgacgcaaag ctgggaaggc agctgtggct attttccagt tgttctagaa agctagcgcc				902
taggccttaa tagggatgag aggaaagaat attattgaaa ttatatacat tgattcactt				962
attcagtgtgta gagcctgtat tctgaagaag tttgacaaaa cggt				1006

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Met Ala Ala Ala	
1	
gcg atg gcg gca gcg gca ggt gga ggg gct ggc gcg gcc cgc tcc ctc	163
Ala Met Ala Ala Ala Ala Gly Gly Gly Ala Gly Ala Ala Arg Ser Leu	
5 10 15 20	
tgc cgc ttc cga ggc tgc ctg gct ggc gcg ctg ctc ggg gac tgc gtg	211
Ser Arg Phe Arg Gly Cys Leu Ala Gly Ala Leu Leu Gly Asp Cys Val	
21 26 31 36	
ggc tcc ttc tac gag gcc cac gac acc gtc gac ctg acg tca gtc ctg	259
Gly Ser Phe Tyr Glu Ala His Asp Thr Val Asp Leu Thr Ser Val Leu	
37 42 47 52	
cgt cat gtc cag agt ctg gag ccg gac ccc ggc acg ccc ggg agt gag	307
Arg His Val Gln Ser Leu Glu Pro Asp Pro Gly Thr Pro Gly Ser Glu	
53 58 63 68	
cgg aca gaa gcc ttg tac tac aca gat gac aca gcc atg gcc agg gcc	355
Arg Thr Glu Ala Leu Tyr Tyr Thr Asp Asp Thr Ala Met Ala Arg Ala	
69 74 79 84	
ctg gtg cag tcc ctg cta gcc aag gag gcc ttt gac gag gtg gac atg	403
Leu Val Gln Ser Leu Leu Ala Lys Glu Ala Phe Asp Glu Val Asp Met	

85	90	95	100	
gct cac aga ttt gct	cag gag tac aag aaa	gac cct gac agg ggc	tat	451
Ala His Arg Phe Ala	Gln Glu Tyr Lys Lys	Asp Pro Asp Arg Gly	Tyr	
101	106	111	116	
ggg gct gga gta gtc	act gtc ttc aag aag	ctc ctg aac ccc aaa	tgt	499
Gly Ala Gly Val Val	Thr Val Phe Lys Lys	Leu Leu Asn Pro Lys	Cys	
117	122	127	132	
cgc gat gtc ttt gag	cct gcc cgg gcc cag	ttt aac ggg aaa ggc	tcc	547
Arg Asp Val Phe Glu	Pro Ala Arg Ala Gln	Phe Asn Gly Lys Gly	Ser	
133	138	143	148	
tat ggc aat gga ggt	gcc atg cgg gtg gct	ggc atc tcc ctg gcc	tat	595
Tyr Gly Asn Gly Gly	Ala Met Arg Val Ala	Gly Ile Ser Leu Ala	Tyr	
149	154	159	164	
agc agt gtc cag gat	gtg cag aag ttt gcc	cgg ctc tcg gcc cag	ctg	643
Ser Ser Val Gln Asp	Val Gln Lys Phe Ala	Arg Leu Ser Ala Gln	Leu	
165	170	175	180	
aca cac gcc tcc tcc	ctg ggt tac aat ggc	gcc atc ctg cag gcc	ctg	691
Thr His Ala Ser Ser	Leu Gly Tyr Asn Gly	Ala Ile Leu Gln Ala	Leu	
181	186	191	196	
gct gtg cac ctg gcc	ttg cag ggc gag tct	tcc agc aag cac ttt	ctc	739
Ala Val His Leu Ala	Leu Gln Gly Glu Ser	Ser Ser Lys His Phe	Leu	
197	202	207	212	
aag caa ctc ctg ggc	cac atg gag gat ctg	gag ggt gat gcc cag	tcc	787
Lys Gln Leu Leu Gly	His Met Glu Asp Leu	Glu Gly Asp Ala Gln	Ser	
213	218	223	228	
gtc ttg gat gcc agg	gag ttg ggc atg gag	gag cgt cca tac tcc	agc	835
Val Leu Asp Ala Arg	Glu Leu Gly Met Glu	Glu Arg Pro Tyr Ser	Ser	
229	234	239	244	
cgc ctg aag aag att	gga gag ctt cta gac	cag gca tcg gtg acc	agg	883
Arg Leu Lys Lys Ile	Gly Glu Leu Leu Asp	Gln Ala Ser Val Thr	Arg	
245	250	255	260	
gag gaa gtg gtg tct	gag cta ggg aat ggc	att gct gcc ttt gag	tcg	931
Glu Glu Val Val Ser	Glu Leu Gly Asn Gly	Ile Ala Ala Phe Glu	Ser	
261	266	271	276	
gta ccc acc gcc atc	tac tgc ttc cta cgc	tgc atg gag cca gac	cct	979
Val Pro Thr Ala Ile	Tyr Cys Phe Leu Arg	Cys Met Glu Pro Asp	Pro	
277	282	287	292	
gag atc cct tct gcc	ttc aat agc ctc caa	agg act ctc att tat	tcc	1027
Glu Ile Pro Ser Ala	Phe Asn Ser Leu Gln	Arg Thr Leu Ile Tyr	Ser	
293	298	303	308	
atc tca ctt ggt ggg	gac aca gac acc att	gcc acc atg gct ggg	gcc	1075
Ile Ser Leu Gly Gly	Asp Thr Asp Thr Ile	Ala Thr Met Ala Gly	Ala	
309	314	319	324	



cg	g	g	g	t	a	c	g	a	a	c	c	t	g	t	g	a	a	g	a	t	g		256				
Arg	Glu	Glu	Tyr	Glu	Glu	Tyr	Gln	Lys	Gln	Leu	Val	Glu	Glu	Lys	Met												
41						46				51					56												
g	a	g	g	a	t	t	a	c	a	g	a	a	g	g	a	g	c	g	g	c	a	c	t	g	304		
Glu	Arg	Asp	Ala	Gln	Phe	Thr	Gln	Arg	Lys	Ala	Glu	Arg	Ala	Thr	Leu												
57					62					67					72												
c	g	a	c	t	t	c	g	a	g	a	a	a	c	a	a	g	a	a	g	a	c	a	g	a	352		
Arg	Ser	His	Phe	Arg	Asp	Lys	Tyr	Arg	Leu	Pro	Lys	Asn	Glu	Thr	Asp												
73					78					83					88												
g	a	g	c	a	t	c	a	g	a	t	g	g	a	g	a	c	t	g	c	c	c	g	g	a	400		
Glu	Ser	Gln	Ile	Gln	Met	Ala	Gly	Gly	Asp	Val	Glu	Leu	Pro	Arg	Glu												
89					94					99					104												
c	t	g	g	c	a	a	g	a	t	g	a	t	c	g	a	g	a	g	a	g	a	a	g	g	c	448	
Leu	Ala	Lys	Met	Ile	Glu	Glu	Asp	Thr	Glu	Glu	Glu	Glu	Glu	Glu	Lys	Ala											
105					110					115					120												
t	c	a	g	t	c	t	t	g	g	a	c	a	g	c	t	t	c	c	t	g	g	c	t	t	a	496	
Ser	Val	Leu	Gly	Gln	Leu	Ala	Ser	Leu	Pro	Gly	Leu	Asn	Leu	Gly	Ser												
121					126					131					136												
c	t	c	a	a	g	a	a	g	g	c	a	a	c	a	c	t	g	g	a	t	c	t	c	a	a	544	
Leu	Lys	Asp	Lys	Ala	Gln	Ala	Thr	Leu	Gly	Asp	Leu	Lys	Gln	Ser	Ala												
137					142					147					152												
g	a	a	g	t	g	t	c	a	c	g	t	c	a	t	g	t	a	c	c	a	c	t	t	c	c	c	597
Glu	Lys	Cys	His	Val	Met	*																					
153					158																						
c	c	c	a	t	g	a	g	a	g	t	g	t	c	a	a	c	t	t	c	c	a	c	c	a	c	657	
tt	c	c	t	t	g	c	c	c	a	a	g	a	c	c	t	t	c	c	a	c	c	a	a	g	c	717	
g	t	t	t	t	t	c	c	t	c	t	g	g	a	a	a	g	t	c	c	c	a	a	g	t	c	777	
c	c	a	c	a	g	c	t	c	c	c	a	a	g	a	t	g	t	a	g	a	c	c	c	a	a	837	
c	c	a	c	a	g	c	t	c	c	c	a	a	g	a	t	g	t	a	g	a	c	a	c	a	a	897	
a	c	c	c	t	g	g	c	a	a	g	a	c	a	a	g	a	c	a	c	a	c	a	c	a	a	957	
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<222> (410)..(1072)

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ttcagaccag	tcctcageta	cattgctgca	ggcaaggccg	gcaccagccc	ccaggctgag	180
tcattgggtaa	aggccaagag	ctgaaacaag	agtttctcat	gcaccaggca	catttataaa	240
gcaacccatc	cacctggagc	ccaaaactgg	gttgacagat	tccagagagg	caaggctcctt	300
gatgacccca	taactcccac	tgccccttta	acaagggact	cttaaacacct	tatgataacc	360
caaatcctaa	acactgttgc	ctctgccgcc	tcttcagac	acagaaggc	atg atc	415
					Met Ile	
					1	
ctg ctg aac act ggc ctc gag gga act gtg gct gaa aac ccc gtg ccc	463					
Leu Leu Asn Thr Gly Leu Glu Gly Thr Val Ala Glu Asn Pro Val Pro						
3 8 13 18						
att gtt cat act cca agt ggc aac atc ctg acg ctg gag tcc tgc ctg	511					
Ile Val His Thr Pro Ser Gly Asn Ile Leu Thr Leu Glu Ser Cys Leu						
19 24 29 34						
cag cag ctg gcc aca cat ccc gga cac tgg ggc atc cat ttg caa ata	559					
Gln Gln Leu Ala Thr His Pro Gly His Trp Gly Ile His Leu Gln Ile						
35 40 45 50						
gcg gag ccc gca gcc ctc cgg cca tcc ctg gcc ttg ctg gca cgc ctc	607					
Ala Glu Pro Ala Ala Leu Arg Pro Ser Leu Ala Leu Leu Ala Arg Leu						
51 56 61 66						
tcc agc ctt ggc ctc ttg cat tgg cct gtg tgg gtt ggg gcc aaa atc	655					
Ser Ser Leu Gly Leu Leu His Trp Pro Val Trp Val Gly Ala Lys Ile						
67 72 77 82						
tcc cac ggg agt ttt tgc gtc ccc ggc cat gtg gct ggc aga gag ctg	703					
Ser His Gly Ser Phe Ser Val Pro Gly His Val Ala Gly Arg Glu Leu						
83 88 93 98						
ctt aca gct gtg gct gag gtc ttc ccc cac gtg act gtg gca cca ggc	751					
Leu Thr Ala Val Ala Glu Val Phe Pro His Val Thr Val Ala Pro Gly						
99 104 109 114						
tgg cct gag gag gtg ctg ggc agt ggc tac agg gaa cag ctg ctc aca	799					
Trp Pro Glu Glu Val Leu Gly Ser Gly Tyr Arg Glu Gln Leu Leu Thr						
115 120 125 130						
gat atg cta gag ttg tgc cag ggg ctc tgg caa cct gtg tcc ttc cag	847					
Asp Met Leu Glu Leu Cys Gln Gly Leu Trp Gln Pro Val Ser Phe Gln						
131 136 141 146						
atg cag gcc atg ctg ctg ggc cac agc aca gct gga gcc ata ggc agg	895					
Met Gln Ala Met Leu Leu Gly His Ser Thr Ala Gly Ala Ile Gly Arg						

ctg ctg gca tcc tcc ccc cgg gcc acc gtc aca gtg gag cac aac cca 943  
 Leu Leu Ala Ser Ser Pro Arg Ala Thr Val Thr Val Glu His Asn Pro  
 163 168 173 178

gct ggg ggc gac tat gcc tct gtg agg aca gca ttg ctg gca gct agg 991  
 Ala Gly Gly Asp Tyr Ala Ser Val Arg Thr Ala Leu Leu Ala Ala Arg  
 179 184 189 194

gct gtg gac agg acc cga gtc tac tac agg cta ccc cag ggc tac cac 1039  
 Ala Val Asp Arg Thr Arg Val Tyr Tyr Arg Leu Pro Gln Gly Tyr His  
 195 200 205 210

aag gac ttg ctg gct cat gtt ggt aga aac tga gcacccag ggggtggtggg 1090  
 Lys Asp Leu Leu Ala His Val Gly Arg Asn \*  
 211 216 221

tcagcggacc tcagggcgga ggcttccac ggggagggcag gaagaaataa aggtcgaatt 1150

ccaccacact ggactagtgg atccgagctc ggtaccaagc ttaagtttg 1199

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 <222> (162)..(2018)

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gggaaagagg gaagacagaa gataaataat aaacatagta g atg gct ttt cgc 173  
 Met Ala Phe Arg  
 1

act gaa atg gga cta tat tat tcc tat ttc aag act att gtg gaa gca 221  
 Thr Glu Met Gly Leu Tyr Tyr Ser Tyr Phe Lys Thr Ile Val Glu Ala  
 5 10 15 20

ccc tca ttt ttg aat gga gta tgg atg att atg aat gat aaa ctg act 269  
 Pro Ser Phe Leu Asn Gly Val Trp Met Ile Met Asn Asp Lys Leu Thr  
 21 26 31 36

gaa tac ccc ctt gtc att aat aca tta aaa aga ttc aat ctt tac cct 317



Glu Tyr Pro Leu Val Ile Asn Thr Leu Lys Arg Phe Asn Leu Tyr Pro	
37 42 47 52	
gag gta att ttg gcc agt tgg tac cgg att tat acc aaa ata atg gac	365
Glu Val Ile Leu Ala Ser Trp Tyr Arg Ile Tyr Thr Lys Ile Met Asp	
53 58 63 68	
ttg att ggt att caa acc aag ata tgt tgg acg gtt acc aga gga gaa	413
Leu Ile Gly Ile Gln Thr Lys Ile Cys Trp Thr Val Thr Arg Gly Glu	
69 74 79 84	
gga ctc agt cct att gaa agc tgt gaa gga ttg gga gat cct gct tgc	461
Gly Leu Ser Pro Ile Glu Ser Cys Glu Gly Leu Gly Asp Pro Ala Cys	
85 90 95 100	
ttt tat gtt gct gta att ttt att tta aat gga cta atg atg gca tta	509
Phe Tyr Val Ala Val Ile Phe Ile Leu Asn Gly Leu Met Met Ala Leu	
101 106 111 116	
ttc ttc ata tat ggc aca tat tta agt ggc agc cga tta gga ggc ctg	557
Phe Phe Ile Tyr Gly Thr Tyr Leu Ser Gly Ser Arg Leu Gly Gly Leu	
117 122 127 132	
gtt aca gtg ttg tgc ttc ttt ttc aat cat gga gag tgt acc cgt gta	605
Val Thr Val Leu Cys Phe Phe Phe Asn His Gly Glu Cys Thr Arg Val	
133 138 143 148	
atg tgg aca cca cct ctc cgt gaa agc ttc tca tat cca ttt ctt gtt	653
Met Trp Thr Pro Pro Leu Arg Glu Ser Phe Ser Tyr Pro Phe Leu Val	
149 154 159 164	
ctt cag atg ttg cta gtg act cat att ctc agg gct aca aaa ctt tat	701
Leu Gln Met Leu Leu Val Thr His Ile Leu Arg Ala Thr Lys Leu Tyr	
165 170 175 180	
aga gga agc ttg att gca ctc tgc att tcc aat gta ttt ttc atg ctt	749
Arg Gly Ser Leu Ile Ala Leu Cys Ile Ser Asn Val Phe Phe Met Leu	
181 186 191 196	
cct tgg cag ttt gct cag ttt gta ctt ctt act cag att gca tca tta	797
Pro Trp Gln Phe Ala Gln Phe Val Leu Leu Thr Gln Ile Ala Ser Leu	
197 202 207 212	
ttt gca gta tat gtt gtc ggg tac att gat ata tgt aaa tta cgg aag	845
Phe Ala Val Tyr Val Val Gly Tyr Ile Asp Ile Cys Lys Leu Arg Lys	
213 218 223 228	
atc att tat ata cac atg att tct ctt gca ctt tgt ttt gtt ttg atg	893
Ile Ile Tyr Ile His Met Ile Ser Leu Ala Leu Cys Phe Val Leu Met	
229 234 239 244	
ttt ggg aac tca atg tta tta act tct tat tat gct tct tct ttg gta	941
Phe Gly Asn Ser Met Leu Leu Thr Ser Tyr Tyr Ala Ser Ser Leu Val	
245 250 255 260	
att att tgg ggt att ctg gca atg aaa cca cat ttc ctg aaa ata aat	989
Ile Ile Trp Gly Ile Leu Ala Met Lys Pro His Phe Leu Lys Ile Asn	

261	266	271	276	
gta tct gaa ctt agt tta tgg gtt att caa gga tgt ttt tgg tta ttt				1037
Val Ser Glu Leu Ser Leu Trp Val Ile Gln Gly Cys Phe Trp Leu Phe				
277	282	287	292	
gga act gtc ata ctt aaa tac ttg aca tct aaa att ttt ggt att gca				1085
Gly Thr Val Ile Leu Lys Tyr Leu Thr Ser Lys Ile Phe Gly Ile Ala				
293	298	303	308	
gat gac gct cat att ggc aac tta cta aca tca aaa ttc ttt agt tat				1133
Asp Asp Ala His Ile Gly Asn Leu Leu Thr Ser Lys Phe Phe Ser Tyr				
309	314	319	324	
aag gat ttt gat act tta ttg tat acc tgt gca gcg gag ttt gac ttt				1181
Lys Asp Phe Asp Thr Leu Leu Tyr Thr Cys Ala Ala Glu Phe Asp Phe				
325	330	335	340	
atg gaa aaa gag act cca ctg aga tac aca aag aca tta ttg ctt cca				1229
Met Glu Lys Glu Thr Pro Leu Arg Tyr Thr Lys Thr Leu Leu Leu Pro				
341	346	351	356	
gtt gtt ctt gta gtg ttt gtt gct att gtt aga aag att att agt gat				1277
Val Val Leu Val Val Phe Val Ala Ile Val Arg Lys Ile Ile Ser Asp				
357	362	367	372	
atg tgg ggt gtc tta gct aaa caa cag aca cat gta aga aaa cac cag				1325
Met Trp Gly Val Leu Ala Lys Gln Gln Thr His Val Arg Lys His Gln				
373	378	383	388	
ttt gat cat gga gag ctg gtt tac cat gca ttg caa ttg tta gca tat				1373
Phe Asp His Gly Glu Leu Val Tyr His Ala Leu Gln Leu Leu Ala Tyr				
389	394	399	404	
aca gcc ctt ggt att tta att atg aga cta aaa ctc ttc ttg aca cca				1421
Thr Ala Leu Gly Ile Leu Ile Met Arg Leu Lys Leu Phe Leu Thr Pro				
405	410	415	420	
cac atg tgt gtt atg gca tca ctg atc tgc tca aga cag cta ttt gga				1469
His Met Cys Val Met Ala Ser Leu Ile Cys Ser Arg Gln Leu Phe Gly				
421	426	431	436	
tgg ctc ttt tgc aaa gta cat cct ggt gct att gtg ttt gct ata tta				1517
Trp Leu Phe Cys Lys Val His Pro Gly Ala Ile Val Phe Ala Ile Leu				
437	442	447	452	
gca gca atg tca ata caa ggt tca gca aat ctg caa acc cag tgg aat				1565
Ala Ala Met Ser Ile Gln Gly Ser Ala Asn Leu Gln Thr Gln Trp Asn				
453	458	463	468	
att gta ggg gag ttc agc aat ttg ccc caa gaa gaa ctt ata gaa tgg				1613
Ile Val Gly Glu Phe Ser Asn Leu Pro Gln Glu Glu Leu Ile Glu Trp				
469	474	479	484	
atc aaa tat agt act aaa cca gat gca gtg ttt gcg ggt gcc atg ccc				1661
Ile Lys Tyr Ser Thr Lys Pro Asp Ala Val Phe Ala Gly Ala Met Pro				
485	490	495	500	

acg atg gca agt gtt aag ctc tct gca ctt cgg ccc att gtg aat cat	1709
Thr Met Ala Ser Val Lys Leu Ser Ala Leu Arg Pro Ile Val Asn His	
501 506 511 516	
cca cat tat gaa gac gca ggc ttg aga gcc aga aca aaa ata gta tac	1757
Pro His Tyr Glu Asp Ala Gly Leu Arg Ala Arg Thr Lys Ile Val Tyr	
517 522 527 532	
tca atg tat agt cgg aaa gca gcc gaa gaa gtg aag cga gaa ctg ata	1805
Ser Met Tyr Ser Arg Lys Ala Ala Glu Glu Val Lys Arg Glu Leu Ile	
533 538 543 548	
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Lys Leu Lys Val Asn Tyr Tyr Ile Leu Glu Glu Ser Trp Cys Val Arg	
549 554 559 564	
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Arg Ser Lys Pro Gly Cys Ser Met Pro Glu Ile Trp Asp Val Glu Asp	
565 570 575 580	
cct gcc aat gct ggg aaa act ccc tta tgt aac ctc ttg gtg aag gat	1949
Pro Ala Asn Ala Gly Lys Thr Pro Leu Cys Asn Leu Leu Val Lys Asp	
581 586 591 596	
tcc aaa cct cac ttc acc act gta ttc cag aac agt gtt tac aaa gtc	1997
Ser Lys Pro His Phe Thr Thr Val Phe Gln Asn Ser Val Tyr Lys Val	
597 602 607 612	
cta gaa gtt gta aaa gaa tga ct gctacatgac ctgctgccta cggagaacta	2050
Leu Glu Val Val Lys Glu *	
613 618	
catctgtaat gggttttaatg ttttgctaag tcatgtgttg ttcatatccc aaaaactttt	2110
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aacttccagc catatggcat tategtgtct ctttctctct ctctcttgc ctctctcttc	2710
tcctcttccc catatcttct gtcaaataag tactgtttac tcatttagtt gcttatcaag	2770



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gccagtgata ttaatgagaa aatgaaagta tgtatcagga ataaagtgat attgcatagg 4630  
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caagcagatg tctcctgcag aatttcagga tcttggtgat tctctgtcag atg gga 176  
Met Gly  
1  
aga ttg ctt tac ctg aaa aaa aaa tca gga gcc aca gaa gaa agg aaa 224  
Arg Leu Leu Tyr Leu Lys Lys Lys Ser Gly Ala Thr Glu Glu Arg Lys  
3 8 13 18  
cca gct gaa gtt ctt att gtc gag gga caa cag tat gca gtt gtt gga 272  
Pro Ala Glu Val Leu Ile Val Glu Gly Gln Gln Tyr Ala Val Val Gly  
19 24 29 34  
acc gta ttg ctg tta ata aga att atc ctt gaa tat tgc cag tgt gtg 320  
Thr Val Leu Leu Leu Ile Arg Ile Ile Leu Glu Tyr Cys Gln Cys Val  
35 40 45 50  
gat aac atc cca tct gtt act act gac atg ctt act cgt ctg tca gat 368  
Asp Asn Ile Pro Ser Val Thr Thr Asp Met Leu Thr Arg Leu Ser Asp  
51 56 61 66  
tta ttg aag tac ttc aat tca aga agt tgc cag tta gtt ctt gga gct 416  
Leu Leu Lys Tyr Phe Asn Ser Arg Ser Cys Gln Leu Val Leu Gly Ala  
67 72 77 82  
ggt gca ctg caa gtt gtt gga cta aaa acg ata act aca aaa aat ttg 464  
Gly Ala Leu Gln Val Val Gly Leu Lys Thr Ile Thr Thr Lys Asn Leu  
83 88 93 98  
gct ctt tct tca cga tgt ttg cag tta att gtg cac tac att cct gtg 512  
Ala Leu Ser Ser Arg Cys Leu Gln Leu Ile Val His Tyr Ile Pro Val  
99 104 109 114

atc cgg gct cat ttt gaa gct cga cta cca cct aag caa tat agc atg Ile Arg Ala His Phe Glu Ala Arg Leu Pro Pro Lys Gln Tyr Ser Met 115 120 125 130	560
ctt agg cat ttt gat cat atc act aag gac tac cat gat cac ata gct Leu Arg His Phe Asp His Ile Thr Lys Asp Tyr His Asp His Ile Ala 131 136 141 146	608
gaa ata tca gct aag ctt gta gcg ata atg gat agc tta ttt gac aag Glu Ile Ser Ala Lys Leu Val Ala Ile Met Asp Ser Leu Phe Asp Lys 147 152 157 162	656
ctg tta tct aag tat gaa gtg aag gct cct gtt cct tct gcc tgt ttc Leu Leu Ser Lys Tyr Glu Val Lys Ala Pro Val Pro Ser Ala Cys Phe 163 168 173 178	704
agg aat att tgt aag caa atg aca aaa atg cac gaa gct ata ttt gat Arg Asn Ile Cys Lys Gln Met Thr Lys Met His Glu Ala Ile Phe Asp 179 184 189 194	752
ctc ctt cca gaa gaa caa aca cag atg tta ttt tta aga att aat gca Leu Leu Pro Glu Glu Gln Thr Gln Met Leu Phe Leu Arg Ile Asn Ala 195 200 205 210	800
agt tat aaa ctc cac ttg aaa aag cag tta tct cac tta aat gtg ata Ser Tyr Lys Leu His Leu Lys Lys Gln Leu Ser His Leu Asn Val Ile 211 216 221 226	848
aat gat gga gga cct caa aat ggg ttg gtc aca gca gat gta gct ttt Asn Asp Gly Gly Pro Gln Asn Gly Leu Val Thr Ala Asp Val Ala Phe 227 232 237 242	896
tac act gga aat ctt caa gcc tta aaa ggc ctt aaa gat ttg gac cta Tyr Thr Gly Asn Leu Gln Ala Leu Lys Gly Leu Lys Asp Leu Asp Leu 243 248 253 258	944
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aagtgttggg aaactggatt cagtgggatc tacaaggaat gtcatttttg tgcacacctac	1175
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tatgggtgtcc caccttattt aatgatggta caatttaaaa tcttagtcaa cttctgtaga	1415
aagttttctc tatgaaagta aagctgtttg aaaaattatt atttttttac agatctttct	1475

GenBank

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caatgtcaag ttgcaggctt tgtgtgttgc atatttaata tttctactac caccgtatgt 1595  
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ttttaagtta ctttcgatgt gtatacgaac aaagaccagg gagaaacaga acttttataa 1955  
ctataggctg ctgtgttggg gccagaaata aggtgacaag taaagacttt tataataacct 2015  
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tgaggagggg cc atg gcc agc gac ggg gcc agg aag caa ttc tgg aag 228  
Met Ala Ser Asp Gly Ala Arg Lys Gln Phe Trp Lys  
1 5 10

cgc agc aac agc aag ctc ccg ggc agc atc cag cac gtg tat ggt gcc 276  
Arg Ser Asn Ser Lys Leu Pro Gly Ser Ile Gln His Val Tyr Gly Ala  
13 18 23 28

cag cac ccc ccc ttt gat cca ctg tta cat ggc act ttg ctc agg tcc 324  
Gln His Pro Pro Phe Asp Pro Leu Leu His Gly Thr Leu Leu Arg Ser  
29 34 39 44

acg gcc aag atg ccg acc aca cca gtg aag gcc aag agg gtc agc acc 372  
Thr Ala Lys Met Pro Thr Thr Pro Val Lys Ala Lys Arg Val Ser Thr  
45 50 55 60

ttc cag gag ttt gag agc aat acc agc gat gcc tgg gac gct ggg gag 420  
Phe Gln Glu Phe Glu Ser Asn Thr Ser Asp Ala Trp Asp Ala Gly Glu

61	66	71	76	
gac gac gat gag ctc ctg gcc atg gcg gcg gag agc ctg aac tcc gag				468
Asp Asp Asp Glu Leu Leu Ala Met Ala Ala Glu Ser Leu Asn Ser Glu				
77	82	87	92	
gtg gtc atg gag acg gcc aac cgt gtg ctg cgt aac cac agc cag cgg				516
Val Val Met Glu Thr Ala Asn Arg Val Leu Arg Asn His Ser Gln Arg				
93	98	103	108	
cag ggg cgg ccc acg ctg cag gag ggg cca ggg ctt cag cag aag ccc				564
Gln Gly Arg Pro Thr Leu Gln Glu Gly Pro Gly Leu Gln Gln Lys Pro				
109	114	119	124	
agg ccc gag gca gag ccg ccc tca ccc ccc agc ggc gac ctc cgg ctg				612
Arg Pro Glu Ala Glu Pro Pro Ser Pro Pro Ser Gly Asp Leu Arg Leu				
125	130	135	140	
gtg aag tcg gtc agt gag agc cac acg tcc tgt cct gca gaa agt gcc				660
Val Lys Ser Val Ser Glu Ser His Thr Ser Cys Pro Ala Glu Ser Ala				
141	146	151	156	
agc gat gcc gcc cct ctg cag agg tcc cag tct ctc cca cac tcg gcc				708
Ser Asp Ala Ala Pro Leu Gln Arg Ser Gln Ser Leu Pro His Ser Ala				
157	162	167	172	
acc gtc acg ctg ggt ggc aca tct gac ccc agc act ctc agc agc tca				756
Thr Val Thr Leu Gly Gly Thr Ser Asp Pro Ser Thr Leu Ser Ser Ser				
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gcg ctg agc gaa aga gag gcc tcc cgg ctc gac aag ttc aag cag ctg				804
Ala Leu Ser Glu Arg Glu Ala Ser Arg Leu Asp Lys Phe Lys Gln Leu				
189	194	199	204	
ctt gcc ggc ccc aac acg gac ctt gag gaa tta cgg agg ttg agc tgg				852
Leu Ala Gly Pro Asn Thr Asp Leu Glu Glu Leu Arg Arg Leu Ser Trp				
205	210	215	220	
tcc gga atc cct aag cca gtg cgt cca atg acg tgg aag ctc ctc tca				900
Ser Gly Ile Pro Lys Pro Val Arg Pro Met Thr Trp Lys Leu Leu Ser				
221	226	231	236	
ggt tac ctt ccc gcc aat gta gac cgg aga cca gcc act ctc cag aga				948
Gly Tyr Leu Pro Ala Asn Val Asp Arg Arg Pro Ala Thr Leu Gln Arg				
237	242	247	252	
aaa caa aaa gaa tat ttt gca ttt att gag cac tat tac gat tct agg				996
Lys Gln Lys Glu Tyr Phe Ala Phe Ile Glu His Tyr Tyr Asp Ser Arg				
253	258	263	268	
aac gac gaa gtt cac cag gac aca tac agg cag atc cac ata gac atc				1044
Asn Asp Glu Val His Gln Asp Thr Tyr Arg Gln Ile His Ile Asp Ile				
269	274	279	284	
cct cgc atg agc cct gaa gcg ttg atc ctg cag ccc aag gtg acg gag				1092
Pro Arg Met Ser Pro Glu Ala Leu Ile Leu Gln Pro Lys Val Thr Glu				
285	290	295	300	



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gga tac gtt cag ggt ata aat gat ctc gtc act cct ttc ttt gtg gtc Gly Tyr Val Gln Gly Ile Asn Asp Leu Val Thr Pro Phe Phe Val Val 317 322 327 332	1188
ttc att tgt gaa tac ata gag gca gag gag gtg gac acg gtg gac gtc Phe Ile Cys Glu Tyr Ile Glu Ala Glu Glu Val Asp Thr Val Asp Val 333 338 343 348	1236
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gcc caa cct ggg att caa atg aaa gtg aaa atg tta gaa gaa ctc gtg Ala Gln Pro Gly Ile Gln Met Lys Val Lys Met Leu Glu Glu Leu Val 381 386 391 396	1380
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gag gtg ccc ctg cgt tgt acc atc cgc ctg tgg gac acc tac cag tct Glu Val Pro Leu Arg Cys Thr Ile Arg Leu Trp Asp Thr Tyr Gln Ser 429 434 439 444	1524
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ctc gtg aga tgg agg aag gaa ata cta gaa gaa aaa gat ttt caa gag Leu Val Arg Trp Arg Lys Glu Ile Leu Glu Glu Lys Asp Phe Gln Glu 461 466 471 476	1620
ctg ctg ctc ttc ctc cag aac ctg ccc aca gcc cac tgg gat gat gag Leu Leu Leu Phe Leu Gln Asn Leu Pro Thr Ala His Trp Asp Asp Glu 477 482 487 492	1668
gac atc agc ctg ttg ctg gcc gag gcc tac cgc ctc aag ttt gct ttt Asp Ile Ser Leu Leu Leu Ala Glu Ala Tyr Arg Leu Lys Phe Ala Phe 493 498 503 508	1716
gcc gac gcc ccc aat cac tac aag aaa tga g cccaggccca cccgcagctg Ala Asp Ala Pro Asn His Tyr Lys Lys *	1767
509 514	

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28 33 38 43  
cag gta ctg gcc tat ctc ctc cgc aga ggc caa gtg agg ttg gtg cag 376  
Gln Val Leu Ala Tyr Leu Leu Arg Arg Gly Gln Val Arg Leu Val Gln  
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Gly Gly Gly Ala Ala Asn Leu Gln Phe Ile Gln Ala Leu Leu Asp Ser  
60 65 70 75  
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Glu Glu Glu Asn Asp Arg Ala Trp Asp Gly Arg Leu Gly Asp Arg Tyr  
76 81 86 91  
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Asn Pro Pro Val Asp Ala Thr Pro Asp Thr Arg Glu Leu Glu Phe Asn  
92 97 102 107

gag atc aag aca caa gtg gaa ctg gcc aca ggg cag ctg ggg ctt agg	568
Glu Ile Lys Thr Gln Val Glu Leu Ala Thr Gly Gln Leu Gly Leu Arg	
108 113 118 123	
cgg gcc gcc cag aag cac agc ttt cct cga atg ttg cac cag aga gaa	616
Arg Ala Ala Gln Lys His Ser Phe Pro Arg Met Leu His Gln Arg Glu	
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Arg Gly Leu Cys His Arg Gly Ser Phe Ser Leu Gly Glu Gln Ser Arg	
140 145 150 155	
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Val Ile Ser His Phe Leu Pro Asn Asp Leu Gly Phe Thr Asp Ser Tyr	
156 161 166 171	
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Met Ser Ala Cys Gln Asp Gln Thr Ile Arg Leu Tyr Asp Cys Arg Tyr	
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Gly Arg Phe His Lys Phe Lys Ser Ile Lys Ala Arg Asp Val Gly Trp	
204 209 214 219	
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Ser Val Leu Asp Val Ala Phe Thr Pro Asp Gly Asn His Phe Leu Tyr	
220 225 230 235	
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Ala Asp Ile Ser Ser Gln Ile Leu Phe Ser Gly Gly Asp Asp Ala Ile	
316 321 326 331	

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Cys Lys Val Trp Asp Arg Arg Thr Met Arg Glu Asp Asp Pro Lys Pro	
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Val Gly Ala Leu Ala Gly His Gln Asp Gly Ile Thr Phe Ile Asp Ser	
348 353 358 363	
aag ggt gat gcc cgg tat ctg atc tcc aac tct aaa gac cag acc atc	1336
Lys Gly Asp Ala Arg Tyr Leu Ile Ser Asn Ser Lys Asp Gln Thr Ile	
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Arg Phe Ser Pro Ile His Ser Thr Gly Gln Gln Phe Ile Tyr Ser Gly	
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Cys Ser Thr Gly Lys Val Val Val Tyr Asp Leu Leu Ser Gly His Ile	
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Val Lys Lys Leu Thr Asn His Lys Ala Cys Val Arg Asp Val Ser Trp	
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His Pro Phe Glu Glu Lys Ile Val Ser Ser Trp Asp Gly Asn Leu	
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Arg Leu Trp Gln Tyr Arg Gln Ala Glu Tyr Phe Gln Asp Asp Met Pro	
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Glu Ser Glu Glu Cys Ala Ser Ala Pro Ala Pro Val Pro Gln Ser Ser	
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Thr Pro Phe Ser Ser Pro Gln *	
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 Met Gly Ser Arg Asn Ser Ser Ser Ala Gly Ser  
 1 5  
 ggg tcc gga gac ccc tcc gag ggc ttg ccc cga aga ggg gct ggc ctg 280  
 Gly Ser Gly Asp Pro Ser Glu Gly Leu Pro Arg Arg Gly Ala Gly Leu  
 12 17 22 27  
 cgt cgg agt gag gaa gag gaa gaa gag gat gaa gat gtg gat ctg gcc 328  
 Arg Arg Ser Glu Glu Glu Glu Glu Asp Glu Asp Val Asp Leu Ala  
 28 33 38 43  
 cag gta ctg gcc tat ctc ctc cgc aga ggc caa gtg agg ttg gtg cag 376  
 Gln Val Leu Ala Tyr Leu Leu Arg Arg Gly Gln Val Arg Leu Val Gln  
 44 49 54 59

gga gga ggt gca gca aat tta caa ttc att cag gcc ctc ttg gac tca	424
Gly Gly Gly Ala Ala Asn Leu Gln Phe Ile Gln Ala Leu Leu Asp Ser	
60 65 70 75	
gag gaa gag aat gac aga gct tgg gat ggt cgt ctt ggg gat cga tac	472
Glu Glu Glu Asn Asp Arg Ala Trp Asp Gly Arg Leu Gly Asp Arg Tyr	
76 81 86 91	
aac cca cct gtg gat gct acc cct gac acc cgg gag ctg gaa ttc aat	520
Asn Pro Pro Val Asp Ala Thr Pro Asp Thr Arg Glu Leu Glu Phe Asn	
92 97 102 107	
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Glu Ile Lys Thr Gln Val Glu Leu Ala Thr Gly Gln Leu Gly Leu Arg	
108 113 118 123	
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Arg Gly Leu Cys His Arg Gly Ser Phe Ser Leu Gly Glu Gln Ser Arg	
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Val Ile Ser His Phe Leu Pro Asn Asp Leu Gly Phe Thr Asp Ser Tyr	
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Ser Gln Lys Ala Phe Cys Gly Ile Tyr Ser Lys Asp Gly Gln Ile Phe	
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Met Ser Ala Cys Gln Asp Gln Thr Ile Arg Leu Tyr Asp Cys Arg Tyr	
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Ser Val Leu Asp Val Ala Phe Thr Pro Asp Gly Asn His Phe Leu Tyr	
220 225 230 235	
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Ser Ser Trp Ser Asp Tyr Ile His Ile Cys Asn Ile Tyr Gly Glu Gly	
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252 257 262 267	
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Val Phe Ser Ile Ala Val Ser Ser Asp Gly Arg Glu Val Leu Gly Gly	
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Ala Asn Asp Gly Cys Leu Tyr Val Phe Asp Arg Glu Gln Asn Arg Arg	
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acc ctt cag att gag tcc cat gag gat gat gtg aat gca gtg gcc ttt	1144
Thr Leu Gln Ile Glu Ser His Glu Asp Asp Val Asn Ala Val Ala Phe	
300 305 310 315	
gct gat ata agc tcc caa atc ctg ttc tct ggg gga gat gat gcc atc	1192
Ala Asp Ile Ser Ser Gln Ile Leu Phe Ser Gly Gly Asp Asp Ala Ile	
316 321 326 331	
tgc aaa gtg tgg gat cga cgc acc atg cgg gag gat gac ccc aag cct	1240
Cys Lys Val Trp Asp Arg Arg Thr Met Arg Glu Asp Asp Pro Lys Pro	
332 337 342 347	
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Val Gly Ala Leu Ala Gly His Gln Asp Gly Ile Thr Phe Ile Asp Ser	
348 353 358 363	
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Lys Val Gly Gln Lys Ser Gly Leu Tyr Ser Gln Ala Ala Lys Val Leu	
364 369 374 379	
gtt gcc cag gag ggc atg aaa gcg gac tgg tgt ggg aat ttg aca agc	1384
Val Ala Gln Glu Gly Met Lys Ala Asp Trp Cys Gly Asn Leu Thr Ser	
380 385 390 395	
tcc tta tta acc aag gtt tgt aag agt tgg agt tta ggg aag ggg ctc	1432
Ser Leu Leu Thr Lys Val Cys Lys Ser Trp Ser Leu Gly Lys Gly Leu	
396 401 406 411	
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412 417 422 427	
agg gca ggg ctt tcc gta caa gaa aaa tgg aag acc ggt cag gta cag	1528
Arg Ala Gly Leu Ser Val Gln Glu Lys Trp Lys Thr Gly Gln Val Gln	
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Arg Leu Thr Pro Val Ile Leu Ala Leu Trp Glu Ala Glu Val Gly Gly	
444 449 454 459	
tca ctt gag ctc agg cgt tcc aga cca gcc tgt gaa acc tag cgagacc	1625
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ggcctttcct gaggacggcg tacggagtgt ggggaatgaa gg atg gca gca tgc	174
Met Ala Ala Cys	
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cgt gca tta aaa gct gtt ttg gta gat ctc agt ggc aca ctt cac att	222
Arg Ala Leu Lys Ala Val Leu Val Asp Leu Ser Gly Thr Leu His Ile	
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Glu Asp Ala Ala Val Pro Gly Ala Gln Glu Ala Leu Lys Arg Leu Arg	
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Gly Ala Ser Val Ile Ile Arg Phe Val Thr Asn Thr Thr Lys Glu Ser	
37 42 47 52	
aag caa gac ctg tta gaa agg ttg aga aaa ttg gaa ttt gat atc tct	366
Lys Gln Asp Leu Leu Glu Arg Leu Arg Lys Leu Glu Phe Asp Ile Ser	
53 58 63 68	
gaa gat gaa ata ttc aca tct ctg act gca gcc aga agt tta cta gag	414
Glu Asp Glu Ile Phe Thr Ser Leu Thr Ala Ala Arg Ser Leu Leu Glu	
69 74 79 84	
cgg aaa caa gtc aga ccc atg ctg cta gtt gat gat cgg gca cta cct	462
Arg Lys Gln Val Arg Pro Met Leu Leu Val Asp Asp Arg Ala Leu Pro	
85 90 95 100	
gat ttc aaa gga ata caa aca agt gat cct aat gct gtg gtc atg gga	510
Asp Phe Lys Gly Ile Gln Thr Ser Asp Pro Asn Ala Val Val Met Gly	
101 106 111 116	
ttg gca cca gaa cat ttt cat tat caa att ctg aat caa gca ttc cgg	558
Leu Ala Pro Glu His Phe His Tyr Gln Ile Leu Asn Gln Ala Phe Arg	
117 122 127 132	
tta ctc ctg gat gga gca cct ctg ata gca atc cac aaa gcc agg tat	606
Leu Leu Leu Asp Gly Ala Pro Leu Ile Ala Ile His Lys Ala Arg Tyr	
133 138 143 148	
tac aag agg aaa gat ggc tta gcc ctg ggg cct gga cca ttt gtg act	654
Tyr Lys Arg Lys Asp Gly Leu Ala Leu Gly Pro Gly Pro Phe Val Thr	
149 154 159 164	
gct tta gag tat gcc aca gat acc aaa gcc aca gtc gtg ggg aaa cca	702
Ala Leu Glu Tyr Ala Thr Asp Thr Lys Ala Thr Val Val Gly Lys Pro	
165 170 175 180	

gag aag acg ttc ttt ttg gaa gca ttg cgg ggc act ggc tgt gaa cct	750
Glu Lys Thr Phe Phe Leu Glu Ala Leu Arg Gly Thr Gly Cys Glu Pro	
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gag gag gct gtc atg ata gga gat gat tgc agg gat gat gtt ggt ggg	798
Glu Glu Ala Val Met Ile Gly Asp Asp Cys Arg Asp Asp Val Gly Gly	
197 202 207 212	

gct caa gat gtc ggc atg ctg ggc atc tta gta aag act ggg aaa tat	846
Ala Gln Asp Val Gly Met Leu Gly Ile Leu Val Lys Thr Gly Lys Tyr	
213 218 223 228	

cga gca tca gat gaa gaa aaa att aat cca cct cct <sup>3</sup> tac tta act tgt	894
Arg Ala Ser Asp Glu Glu Lys Ile Asn Pro Pro Pro Tyr Leu Thr Cys	
229 234 239 244	

gag agt ttc cct cat gct gcg gac cac att ctg cag cac cta ttg tga	942
Glu Ser Phe Pro His Ala Ala Asp His Ile Leu Gln His Leu Leu *	
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gatcgtgcag caggggtcgg agcccgctgc cgagggcagg gcagggcagg tcggggtggg	180
gcggggcggg gatcaagcag gggcagggct ggcgctgcgg cgggagatgc tgcggggccg	240
cgcgggcgct tggcagccag gagctctgca ttgaaggcac tggggtaaag tgaatgccga	300
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Met	
1	

aac cct ttc tgg agc atg tct aca agc tct gta cgc aaa cga tct gaa	405
Asn Pro Phe Trp Ser Met Ser Thr Ser Ser Val Arg Lys Arg Ser Glu	
2 7 12 17	

ggg gaa gag aag aca tta aca ggg gac gtg aaa acc agt cct cca cga	453
Gly Glu Glu Lys Thr Leu Thr Gly Asp Val Lys Thr Ser Pro Pro Arg	
18 23 28 33	

act gca cca aag aaa cag ctg cct tct att ccc aaa aat gct ttg ccc	501
Thr Ala Pro Lys Lys Gln Leu Pro Ser Ile Pro Lys Asn Ala Leu Pro	
34 39 44 49	
ata act aag cct aca tct cct gcc cca gca gca cag tca aca aat ggc	549
Ile Thr Lys Pro Thr Ser Pro Ala Pro Ala Ala Gln Ser Thr Asn Gly	
50 55 60 65	
acg cat gcg tcc tat gga ccc ttc tac ctg gaa tac tct ctt ctt gca	597
Thr His Ala Ser Tyr Gly Pro Phe Tyr Leu Glu Tyr Ser Leu Leu Ala	
66 71 76 81	
gaa ttt acc ttg gtt gtg aag cag aag cta cca ggc gtc tat gtg cag	645
Glu Phe Thr Leu Val Val Lys Gln Lys Leu Pro Gly Val Tyr Val Gln	
82 87 92 97	
cca tct tat cgc tct gca tta atg tgg ttt gga gta ata ttc ata cgg	693
Pro Ser Tyr Arg Ser Ala Leu Met Trp Phe Gly Val Ile Phe Ile Arg	
98 103 108 113	
cat gga ctt tac caa gat ggc gta ttt aag ttt aca gtt tac atc cct	741
His Gly Leu Tyr Gln Asp Gly Val Phe Lys Phe Thr Val Tyr Ile Pro	
114 119 124 129	
gat aac tat cca gat ggt gac tgt cca cgc ttg gtg ttc gat att cct	789
Asp Asn Tyr Pro Asp Gly Asp Cys Pro Arg Leu Val Phe Asp Ile Pro	
130 135 140 145	
gtc ttt cac ccg cta gtt gat ccc acc tca ggt gag ctg gat gtg aag	837
Val Phe His Pro Leu Val Asp Pro Thr Ser Gly Glu Leu Asp Val Lys	
146 151 156 161	
aga gca ttt gca aaa tgg agg cgg aac cat aat cat att tgg cag gta	885
Arg Ala Phe Ala Lys Trp Arg Arg Asn His Asn His Ile Trp Gln Val	
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Lys Ser Lys Val Val Asp Ser Val Lys Val Cys Thr Ala Arg Leu Phe	
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Asp Gln Pro Lys Ile Glu Asp Pro Tyr Ala Ile Ser Phe Ser Pro Trp	
226 231 236 241	
aat cct tct gta cat gat gaa gcc aga gaa aag atg ctg act cag aaa	1125
Asn Pro Ser Val His Asp Glu Ala Arg Glu Lys Met Leu Thr Gln Lys	
242 247 252 257	

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Lys Lys Pro Glu Glu Gln His Asn Lys Ser Val His Val Ala Gly Leu
258                      263                      268                      273

tca tgg gta aag cct ggc tca gta cag cct ttc agt aaa gaa gag aaa      1221
Ser Trp Val Lys Pro Gly Ser Val Gln Pro Phe Ser Lys Glu Glu Lys
274                      279                      284                      289

aca gtg gcg act taa gagatggtga atctggtgca ccatgcactt tcttgctaga      1276
Thr Val Ala Thr *
290

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acctgtctct aagtaatgca ttacttctgt cagaagtgtc ttaggggtggt tatctagttc      1456

agtactccaa attattgggg accttgaggc ttaagtaagt atttttctga atataatgct      1516

aaaggtaagt tgcattcatt taaactaata gagcagacag aattcagcac tacttaatag      1576

tttataaatc agtgggttca gttgtatata tgtaggaaa tggagaggta tagagagagc      1636

aggttccata gctcagcact ttttaagtga agatcatttg aatctcagtc ttcagcctgc      1696

actgatttgt agcctgcact gtcttactga tttacaaact gaaatcactg agaaatgtct      1756

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aaattacttt acttactgta tttttatggc aggagggaga aaaagtgtta caacgggttc      1876

taatgaagtc cgggtatttaa atgataaatg actaatgtgt ttagtagaga caaaagaaac      1936

caataaatga ttgttctttg ccatttatgc aggaaactac ctttttctca atataaccaa      1996

acaaaggcta atttataaat gctttattga aaaatacact tatcttcata taaaattaca      2056

gtagcagtat cttgagaagt tttataaata tttttgcaga acactattct aattgaacaa      2116

tgtaagttcc atatttctct cagcaatatg aagttaccta gtaactttgt ttatactgat      2176

tcaatttaca attgaatttt ctccctaata agattattaa tttgacttga aaactgctgg      2236

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Met Ala Ala His Glu Trp Asp Trp Phe Gln Arg Glu Glu  
1 5 10

ctc atc ggg cag att agc gac atc cga gtg cag aac ctg caa gtt gag 157  
Leu Ile Gly Gln Ile Ser Asp Ile Arg Val Gln Asn Leu Gln Val Glu  
14 19 24 29

agg gaa aat gtg cag aag agg acc ttt aca cga tgg ata aat cta cat 205  
Arg Glu Asn Val Gln Lys Arg Thr Phe Thr Arg Trp Ile Asn Leu His  
30 35 40 45

cta gaa aag tgc aac cca cct cta gaa gtt aaa gat tta ttc gtc gat 253  
Leu Glu Lys Cys Asn Pro Pro Leu Glu Val Lys Asp Leu Phe Val Asp  
46 51 56 61

ata caa gat ggc aaa atc cta atg gct ttg tta gaa gtc ctg tct ggg 301  
Ile Gln Asp Gly Lys Ile Leu Met Ala Leu Leu Glu Val Leu Ser Gly  
62 67 72 77

cgg aat ctg ctg cac gaa tac aaa tcc tcc tcc cat cgt att ttt cgg 349  
Arg Asn Leu Leu His Glu Tyr Lys Ser Ser Ser His Arg Ile Phe Arg  
78 83 88 93

ttg aac aac ata gcg aaa gca ctt aag ttt ttg gaa gat agc aat gta 397  
Leu Asn Asn Ile Ala Lys Ala Leu Lys Phe Leu Glu Asp Ser Asn Val  
94 99 104 109

aaa ctg gtt agc att gat gca gca gaa ata gca gat ggc aac cct tct 445  
Lys Leu Val Ser Ile Asp Ala Ala Glu Ile Ala Asp Gly Asn Pro Ser  
110 115 120 125

ttg gtt ctt ggg ctg ata tgg aac ata atc ctc ttc ttc cag att aag 493  
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126 131 136 141

gag ctc aca ggc aac ctc agc aga aac tct cca tct tcc agc ttg tcc 541  
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142 147 152 157

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158 163 168 173

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174 179 184 189

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190 195 200 205

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Leu Ala Val Ile Lys Ala Ile Asp Pro Ser Leu Val Asp Met Lys Gln	
222 227 232 237	
gcc ctg gaa aat tcc aca cga gaa aat cta gag aag gct ttc agc atc	829
Ala Leu Glu Asn Ser Thr Arg Glu Asn Leu Glu Lys Ala Phe Ser Ile	
238 243 248 253	
gca cag gat gcc ctg cac atc ccc agg ctc ctg gag cca gaa gac atc	877
Ala Gln Asp Ala Leu His Ile Pro Arg Leu Leu Glu Pro Glu Asp Ile	
254 259 264 269	
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Met Val Asp Thr Pro Asp Glu Gln Ser Ile Met Thr Tyr Val Ala Gln	
270 275 280 285	
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Phe Leu Glu Arg Phe Pro Glu Leu Glu Ala Glu Asp Ile Phe Asp Ser	
286 291 296 301	
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Asp Lys Glu Val Pro Ile Glu Ser Thr Phe Val Arg Ile Lys Glu Thr	
302 307 312 317	
cct tct gaa cag gag agc aaa gtc ttc gtt ctg act gaa aat ggg gag	1069
Pro Ser Glu Gln Glu Ser Lys Val Phe Val Leu Thr Glu Asn Gly Glu	
318 323 328 333	
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Arg Thr Tyr Thr Val Asn His Glu Thr Ser His Pro Pro Pro Ser Lys	
334 339 344 349	
gtc ttt gtc tgt gac aag ccc gag agc atg aag gaa ttc cgc ctg gat	1165
Val Phe Val Cys Asp Lys Pro Glu Ser Met Lys Glu Phe Arg Leu Asp	
350 355 360 365	
ggg gtt tcc agc cat gcg ctg tca gac agc tcc acc gag ttc atg cac	1213
Gly Val Ser Ser His Ala Leu Ser Asp Ser Ser Thr Glu Phe Met His	
366 371 376 381	
cag att att gac cag gtc ctg caa ggg ggc cca ggt aag acc agc gac	1261
Gln Ile Ile Asp Gln Val Leu Gln Gly Gly Pro Gly Lys Thr Ser Asp	
382 387 392 397	
atc agt gag cca tct cca gaa tcc tcc att tta tca tcc aga aag gag	1309
Ile Ser Glu Pro Ser Pro Glu Ser Ser Ile Leu Ser Ser Arg Lys Glu	
398 403 408 413	
aac ggg agg tcc aac tct ttg ccg atc aag aaa aca gtt cac ttt gag	1357
Asn Gly Arg Ser Asn Ser Leu Pro Ile Lys Lys Thr Val His Phe Glu	
414 419 424 429	
gct gac acc tac aag gat cct ttc tgc agt aag aac ctg tcc ctt tgc	1405
Ala Asp Thr Tyr Lys Asp Pro Phe Cys Ser Lys Asn Leu Ser Leu Cys	

430	435	440	445	
ttt gaa ggg agc cca aga gtg gca aag gaa tca ttg agg cag gat gga				1453
Phe Glu Gly Ser Pro Arg Val Ala Lys Glu Ser Leu Arg Gln Asp Gly				
446	451	456	461	
cat gtc ttg gca gtt gag gtt gct gag gaa aag gaa cag aaa cag gaa				1501
His Val Leu Ala Val Glu Val Ala Glu Glu Lys Glu Gln Lys Gln Glu				
462	467	472	477	
tcc tcg aag att cca gaa tcc tcc tct gac aag gtc gct ggt gac att				1549
Ser Ser Lys Ile Pro Glu Ser Ser Ser Asp Lys Val Ala Gly Asp Ile				
478	483	488	493	
ttt ttg gtg gag ggc aca aac aat aat tct cag tct tct tcc tgt aat				1597
Phe Leu Val Glu Gly Thr Asn Asn Asn Ser Gln Ser Ser Ser Cys Asn				
494	499	504	509	
ggg gct tta gag agt aca gcc cgc cac gat gaa gaa agt cac tct ctt				1645
Gly Ala Leu Glu Ser Thr Ala Arg His Asp Glu Glu Ser His Ser Leu				
510	515	520	525	
tta ccc cca gga gaa aat act gtg atg gcc gat tcc ttc cag atc aag				1693
Leu Pro Pro Gly Glu Asn Thr Val Met Ala Asp Ser Phe Gln Ile Lys				
526	531	536	541	
gtt aac ctg atg act gta gaa gct tta gag gag gga gac tat ttt gaa				1741
Val Asn Leu Met Thr Val Glu Ala Leu Glu Glu Gly Asp Tyr Phe Glu				
542	547	552	557	
gcc atc cca tta aaa gcc tca aaa ttt aac agc gac cta ata gat ttt				1789
Ala Ile Pro Leu Lys Ala Ser Lys Phe Asn Ser Asp Leu Ile Asp Phe				
558	563	568	573	
gct tct acc agc cag gct ttc aac aaa gtt cct tca cct cat gag aca				1837
Ala Ser Thr Ser Gln Ala Phe Asn Lys Val Pro Ser Pro His Glu Thr				
574	579	584	589	
aaa cct gac gag gat gct gag gct ttt gag aat cat gct gaa aaa cta				1885
Lys Pro Asp Glu Asp Ala Glu Ala Phe Glu Asn His Ala Glu Lys Leu				
590	595	600	605	
ggg aaa agg agt att aaa tct gct cac aaa aag aag gat tcg cca gag				1933
Gly Lys Arg Ser Ile Lys Ser Ala His Lys Lys Lys Asp Ser Pro Glu				
606	611	616	621	
cct caa gtt aag atg gac aaa cat gaa cct cat cag gac tcc gga gaa				1981
Pro Gln Val Lys Met Asp Lys His Glu Pro His Gln Asp Ser Gly Glu				
622	627	632	637	
gaa gct gaa ggc tgt cct tca gcc cca gaa gag aca cca gtg gat aaa				2029
Glu Ala Glu Gly Cys Pro Ser Ala Pro Glu Glu Thr Pro Val Asp Lys				
638	643	648	653	
aag cca gag gtg cat gaa aag gcc aag aga aag tcc acc cgt cct cat				2077
Lys Pro Glu Val His Glu Lys Ala Lys Arg Lys Ser Thr Arg Pro His				
654	659	664	669	

tat gag gaa gag gga gaa gac gat gac ctc cag ggt gtg ggc gag gaa Tyr Glu Glu Glu Gly Glu Asp Asp Asp Leu Gln Gly Val Gly Glu Glu 670 675 680 685	2125
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agt cac agc gaa gaa ggc ctg gat ttc aag ccc tcc cca ccc ctc tca Ser His Ser Glu Glu Gly Leu Asp Phe Lys Pro Ser Pro Pro Leu Ser 702 707 712 717	2221
aag gtt tcc gtc att ccc cac gac ctc ttc tat ttc <sup>4</sup> cca cac tat gag Lys Val Ser Val Ile Pro His Asp Leu Phe Tyr Phe Pro His Tyr Glu 718 723 728 733	2269
gtt ccc ctg gct gca gtt ttg gag gct tat gta gaa gac ccg gag gat Val Pro Leu Ala Ala Val Leu Glu Ala Tyr Val Glu Asp Pro Glu Asp 734 739 744 749	2317
cta aaa aat gaa gaa atg gat ctc gaa gag cca gag ggc tat atg cca Leu Lys Asn Glu Glu Met Asp Leu Glu Glu Pro Glu Gly Tyr Met Pro 750 755 760 765	2365
gac ctg gac tcc agg gag gag gag gcc gat ggc tct cag agc agc tcc Asp Leu Asp Ser Arg Glu Glu Glu Ala Asp Gly Ser Gln Ser Ser Ser 766 771 776 781	2413
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ctg tat ctc agc agg ggt ggt gtg ggt acc aca cca gcc tca gaa ccc Leu Tyr Leu Ser Arg Gly Gly Val Gly Thr Thr Pro Ala Ser Glu Pro 798 803 808 813	2509
gct cca ctg gcc ccc cat gag gac cac cag caa agg gag acc aaa gag Ala Pro Leu Ala Pro His Glu Asp His Gln Gln Arg Glu Thr Lys Glu 814 819 824 829	2557
aat gac ccc atg gac agc cat cag tcc cag gaa tcc cca aac ctg gaa Asn Asp Pro Met Asp Ser His Gln Ser Gln Glu Ser Pro Asn Leu Glu 830 835 840 845	2605
aac ata gca aac ccc cta gaa gaa aat gta acg aaa gaa tca atc agt Asn Ile Ala Asn Pro Leu Glu Glu Asn Val Thr Lys Glu Ser Ile Ser 846 851 856 861	2653
agt aaa aaa aag gaa aaa agg aaa cat gtg gac cac gta gaa agt tca Ser Lys Lys Lys Glu Lys Arg Lys His Val Asp His Val Glu Ser Ser 862 867 872 877	2701
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Asp Ser Ser Asp Tyr Ser Ile Pro Ser Arg Thr Ser His Ser Asp Ser	
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Ser Ile Tyr Leu Arg Arg His Thr His Arg Ser Ser Glu Ser Asp His	
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Phe Ser Tyr Val Gln Leu Arg Asn Ala Ala Asp Leu Asp Asp Arg Arg	
926 931 936 941	
aac cga ata tta acc agg aag gcc aac agc tca gga gaa gcc atg tca	2941
Asn Arg Ile Leu Thr Arg Lys Ala Asn Ser Ser Gly Glu Ala Met Ser	
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ctg ggg agc cac agc ccg cag agt gac tcc ctg aca cag ctt gtc cag	2989
Leu Gly Ser His Ser Pro Gln Ser Asp Ser Leu Thr Gln Leu Val Gln	
958 963 968 973	
cag ccg gat atg atg tat ttt att ctc ttc ctg tgg ctc ctg gtg tac	3037
Gln Pro Asp Met Met Tyr Phe Ile Leu Phe Leu Trp Leu Leu Val Tyr	
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cgggtctttt cctggtccca ggcaaagcgg agcggagatc ctcaaacggc ctagtgcctc	180
gcgcttccgg aggaaaatca gcggtctaataa taattcctct ggtttgttga agcagttacc	240
aagaatcttc aaccctttcc cacaaaagct aattgagtac acgttcctgt tgagtacacg	300
ttcctgttga ttacaaaag gtgcaggtat gagcaggtct gaagactaac attttgtgaa	360
gttgtaaaac agaaaacctg ttagaa atg tgg tgg ttt cag caa ggc ctc agt	413
Met Trp Trp Phe Gln Gln Gly Leu Ser	

ttc ctt cct tca gcc ctt gta att tgg aca tct gct gct ttc ata ttt	461
Phe Leu Pro Ser Ala Leu Val Ile Trp Thr Ser Ala Ala Phe Ile Phe	
10 15 20 25	
tca tac att act gca gta aca ctc cac cat ata gac ccg gct tta cct	509
Ser Tyr Ile Thr Ala Val Thr Leu His His Ile Asp Pro Ala Leu Pro	
26 31 36 41	
tat atc agt gac act ggt aca gta gct cca gaa aaa tgc tta ttt ggg	557
Tyr Ile Ser Asp Thr Gly Thr Val Ala Pro Glu Lys Cys Leu Phe Gly	
42 47 52 57	
gca atg cta aat att gcg gca gtt tta tgc att gct acc att tat gtt	605
Ala Met Leu Asn Ile Ala Ala Val Leu Cys Ile Ala Thr Ile Tyr Val	
58 63 68 73	
cgt tat aag caa gtt cat gct ctg agt cct gaa gag aac gtt atc atc	653
Arg Tyr Lys Gln Val His Ala Leu Ser Pro Glu Glu Asn Val Ile Ile	
74 79 84 89	
aaa tta aac aag gct ggc ctt gta ctt gga ata ctg agt tgt tta gga	701
Lys Leu Asn Lys Ala Gly Leu Val Leu Gly Ile Leu Ser Cys Leu Gly	
90 95 100 105	
ctt tct att gtg gca aac ttc cag aaa aca acc ctt ttt gct gca cat	749
Leu Ser Ile Val Ala Asn Phe Gln Lys Thr Thr Leu Phe Ala Ala His	
106 111 116 121	
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Val Ser Gly Ala Val Leu Thr Phe Gly Met Gly Ser Leu Tyr Met Phe	
122 127 132 137	
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Val Gln Thr Ile Leu Ser Tyr Gln Met Gln Pro Lys Ile His Gly Lys	
138 143 148 153	
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Gln Val Phe Trp Ile Arg Leu Leu Leu Val Ile Trp Cys Gly Val Ser	
154 159 164 169	
gca ctt agc atg ctg act tgc tca tca gtt ttg cac agt ggc aat ttt	941
Ala Leu Ser Met Leu Thr Cys Ser Ser Val Leu His Ser Gly Asn Phe	
170 175 180 185	
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Gly Thr Asp Leu Glu Gln Lys Leu His Trp Asn Pro Glu Asp Lys Gly	
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Tyr Val Leu His Met Ile Thr Thr Ala Ala Glu Trp Ser Met Ser Phe	
202 207 212 217	
tcc ttc ttt ggt ttt ttc ctg act tac att cgt gat ttt cag aaa att	1085
Ser Phe Phe Gly Phe Phe Leu Thr Tyr Ile Arg Asp Phe Gln Lys Ile	
218 223 228 233	



Phe	Leu	Arg	Met	Pro	Leu	Asp	Lys	His	Met	Glu	Met	Glu	Asn	Ile	Ser		
61					66					71					76		
tca	gaa	gaa	gtt	gtg	gaa	ata	gaa	tac	gtg	gag	aag	tat	act	gca	ccc	471	
Ser	Glu	Glu	Val	Val	Glu	Ile	Glu	Tyr	Val	Glu	Lys	Tyr	Thr	Ala	Pro		
77					82					87					92		
cag	cca	gag	caa	tgc	atg	ttc	cat	gat	gac	tgg	atc	agt	tca	att	aaa	519	
Gln	Pro	Glu	Gln	Cys	Met	Phe	His	Asp	Asp	Trp	Ile	Ser	Ser	Ile	Lys		
93					98					103					108		
ggg	gca	gag	gaa	tgg	atc	ttg	act	ggt	tct	tat	gat	aag	act	tct	cgg	567	
Gly	Ala	Glu	Glu	Trp	Ile	Leu	Thr	Gly	Ser	Tyr	Asp	Lys	Thr	Ser	Arg		
109					114					119					124		
atc	tgg	tcc	ttg	gaa	gga	aag	tca	ata	atg	aca	att	gtg	gga	cat	acg	615	
Ile	Trp	Ser	Leu	Glu	Gly	Lys	Ser	Ile	Met	Thr	Ile	Val	Gly	His	Thr		
125					130					135					140		
gat	gtt	gta	aaa	gat	gtg	gcc	tgg	gtg	aaa	aaa	gat	agt	ttg	tcc	tgc	663	
Asp	Val	Val	Lys	Asp	Val	Ala	Trp	Val	Lys	Lys	Asp	Ser	Leu	Ser	Cys		
141					146					151					156		
tta	tta	ttg	agt	gct	tct	atg	gat	cag	act	att	ctc	tta	tgg	gag	tgg	711	
Leu	Leu	Leu	Ser	Ala	Ser	Met	Asp	Gln	Thr	Ile	Leu	Leu	Trp	Glu	Trp		
157					162					167					172		
aat	gta	gag	aga	aac	aaa	gtg	aaa	gcc	cta	cac	tgc	tgt	aga	ggt	cat	759	
Asn	Val	Glu	Arg	Asn	Lys	Val	Lys	Ala	Leu	His	Cys	Cys	Arg	Gly	His		
173					178					183					188		
gct	gga	agt	gta	gat	tct	ata	gct	gtt	gat	ggc	tca	gga	act	aaa	ttt	807	
Ala	Gly	Ser	Val	Asp	Ser	Ile	Ala	Val	Asp	Gly	Ser	Gly	Thr	Lys	Phe		
189					194					199					204		
tgc	agt	ggc	tcc	tgg	gat	aag	atg	cta	aag	atc	tgg	tct	aca	gtc	cct	855	
Cys	Ser	Gly	Ser	Trp	Asp	Lys	Met	Leu	Lys	Ile	Trp	Ser	Thr	Val	Pro		
205					210					215					220		
aca	gat	gaa	gaa	gat	gaa	atg	gag	gag	tcc	aca	aat	cga	cca	aga	aag	903	
Thr	Asp	Glu	Glu	Asp	Glu	Met	Glu	Glu	Ser	Thr	Asn	Arg	Pro	Arg	Lys		
221					226					231					236		
aaa	cag	aag	aca	gaa	cag	ttg	gga	cta	aca	agg	act	ccc	ata	gtg	acc	951	
Lys	Gln	Lys	Thr	Glu	Gln	Leu	Gly	Leu	Thr	Arg	Thr	Pro	Ile	Val	Thr		
237					242					247					252		
ctc	tct	ggc	cac	atg	gag	gca	gtt	tcc	tca	gtt	ctg	tgg	tca	gat	gct	999	
Leu	Ser	Gly	His	Met	Glu	Ala	Val	Ser	Ser	Val	Leu	Trp	Ser	Asp	Ala		
253					258					263					268		
gaa	gaa	atc	tgc	agt	gca	tct	tgg	gac	cat	aca	att	aga	gtg	tgg	gat	1047	
Glu	Glu	Ile	Cys	Ser	Ala	Ser	Trp	Asp	His	Thr	Ile	Arg	Val	Trp	Asp		
269					274					279					284		
gtt	gag	tct	ggc	agt	ctt	aag	tca	act	ttg	aca	gga	aat	aaa	gtg	ttt	1095	
Val	Glu	Ser	Gly	Ser	Leu	Lys	Ser	Thr	Leu	Thr	Gly	Asn	Lys	Val	Phe		

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aat tgt att tcc tat tct cca ctt tgt aaa cgt tta gca tct gga agc				1143
Asn Cys Ile Ser Tyr Ser Pro Leu Cys Lys Arg Leu Ala Ser Gly Ser				
301	306	311	316	
aca gat agg cat atc aga ctg tgg gat ccc cga act aaa gat ggt tct				1191
Thr Asp Arg His Ile Arg Leu Trp Asp Pro Arg Thr Lys Asp Gly Ser				
317	322	327	332	
ttg gtg tgg ctg tcc cta acg tca cat act ggt tgg gtg aca tca gta				1239
Leu Val Ser Leu Ser Leu Thr Ser His Thr Gly Trp Val Thr Ser Val				
333	338	343	348	
aaa tgg tct cct acc cat gaa cag cag ctg att tca gga tct tta gat				1287
Lys Trp Ser Pro Thr His Glu Gln Gln Leu Ile Ser Gly Ser Leu Asp				
349	354	359	364	
aac att gtt aag ctg tgg gat aca aga agt tgt aag gct cct ctc tat				1335
Asn Ile Val Lys Leu Trp Asp Thr Arg Ser Cys Lys Ala Pro Leu Tyr				
365	370	375	380	
gat ctg gct gct cat gaa gac aaa gtt ctg agt gta gac tgg aca gac				1383
Asp Leu Ala Ala His Glu Asp Lys Val Leu Ser Val Asp Trp Thr Asp				
381	386	391	396	
aca ggg cta ctt ctg agt gga gga gca gac aat aaa ttg tat tcc tac				1431
Thr Gly Leu Leu Leu Ser Gly Gly Ala Asp Asn Lys Leu Tyr Ser Tyr				
397	402	407	412	
aga tat tca cct acc act tcc cat gtt ggg gca tga aagt gaacaataat				1481
Arg Tyr Ser Pro Thr Thr Ser His Val Gly Ala *				
413	418	423		
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His Ala Pro Tyr Cys Pro Leu Cys Lys Glu Ser Leu Lys Glu Tyr Leu	
152 157 162 167	
gca gat agg agg tac tgt gtc aca cag ctg ttg gaa gaa tta ata gtg	1181
Ala Asp Arg Arg Tyr Cys Val Thr Gln Leu Leu Glu Glu Leu Ile Val	
168 173 178 183	
aag tat ctg cct gat gaa ctg tct gag aga aaa aaa ata tat gat gaa	1229
Lys Tyr Leu Pro Asp Glu Leu Ser Glu Arg Lys Lys Ile Tyr Asp Glu	
184 189 194 199	
gaa act gct gaa ctc tca cac ttg acc aag aat gtt cca ata ttt gtt	1277
Glu Thr Ala Glu Leu Ser His Leu Thr Lys Asn Val Pro Ile Phe Val	
200 205 210 215	
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Cys Thr Met Ala Tyr Pro Thr Val Pro Cys Pro Leu His Val Phe Glu	
216 221 226 231	
cca aga tac aga ttg atg att cga aga agt ata cag act gga acc aaa	1373
Pro Arg Tyr Arg Leu Met Ile Arg Arg Ser Ile Gln Thr Gly Thr Lys	
232 237 242 247	
cag ttt ggc atg tgt gtc agt gat aca caa aat agt ttt gca gat tat	1421
Gln Phe Gly Met Cys Val Ser Asp Thr Gln Asn Ser Phe Ala Asp Tyr	
248 253 258 263	
ggg tgt atg tta caa att aga aac gtg cat ttc tta ccg gac gga agg	1469
Gly Cys Met Leu Gln Ile Arg Asn Val His Phe Leu Pro Asp Gly Arg	
264 269 274 279	
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Ser Val Val Asp Thr Val Gly Gly Lys Arg Phe Arg Val Leu Lys Arg	
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Gly Met Lys Asp Gly Tyr Cys Thr Ala Asp Ile Glu Tyr Leu Glu Asp	
296 301 306 311	
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Val Lys Val Glu Asn Glu Asp Glu Ile Lys Asn Leu Arg Glu Leu His	
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Asp Leu Val Tyr Ser Gln Ala Cys Ser Trp Phe Gln Asn Leu Arg Asp	
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Arg Phe Arg Ser Gln Ile Leu Gln His Phe Gly Ser Met Pro Glu Arg	
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Glu Glu Asn Leu Gln Ala Ala Pro Asn Gly Pro Ala Trp Cys Trp Trp	

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Leu Leu Ala Val Leu Pro Val Asp Pro Arg Tyr Gln Leu Ser Val Leu				
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tca atg aag tct ttg aaa gaa cgg ttg acc aag ata cag cat ata ctg				1853
Ser Met Lys Ser Leu Lys Glu Arg Leu Thr Lys Ile Gln His Ile Leu				
392	397	402	407	
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Thr Tyr Phe Ser Arg Asp Gln Ser Lys *				
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 1 5 10 15  
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 Ala Asn Leu Gly Ala Glu Cys Leu Arg Met Leu Asp Ser Gly Ala Asp  
 17 22 27 32  
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 Tyr Leu His Leu Asp Val Met Asp Gly His Phe Val Pro Asn Ile Thr  
 33 38 43 48  
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 Phe Gly His Pro Val Val Glu Ser Leu Arg Lys Gln Leu Gly Gln Asp  
 49 54 59 64  
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 Lys Pro Met Ala Val Ala Gly Ala Asn Gln Tyr Thr Phe His Leu Glu  
 81 86 91 96  
 gct act gag aac cca ggg gct ttg att aaa gac att cgg gag aat ggg 396  
 Ala Thr Glu Asn Pro Gly Ala Leu Ile Lys Asp Ile Arg Glu Asn Gly  
 97 102 107 112  
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 Met Lys Val Gly Leu Ala Ile Lys Pro Gly Thr Ser Val Glu Tyr Leu  
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 Ala Pro Trp Ala Asn Gln Ile Asp Met Ala Leu Val Met Thr Val Glu  
 129 134 139 144  
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 Pro Gly Phe Gly Gly Gln Lys Phe Met Glu Asp Met Met Pro Lys Val  
 145 150 155 160  
 cac tgg ttg agg acc cag ttc cca tct ttg gat ata gag gtc gat ggt 588  
 His Trp Leu Arg Thr Gln Phe Pro Ser Leu Asp Ile Glu Val Asp Gly  
 161 166 171 176  
 gga gta ggt cct gac act gtc cat aaa tgt gca gag gca gga gct aac 636

Gly Val Gly Pro Asp Thr Val His Lys Cys Ala Glu Ala Gly Ala Asn	
177 182 187 192	
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Met Ile Val Ser Gly Ser Ala Ile Met Arg Ser Glu Asp Pro Arg Ser	
193 198 203 208	
gtg atc aat cta tta aga aat gtt tgc tca gaa gct gct cag aaa cgt	732
Val Ile Asn Leu Leu Arg Asn Val Cys Ser Glu Ala Ala Gln Lys Arg	
209 214 219 224	
tct ctt gat cgg tga aaccataagg agcccagtgt tctgttcat gaaatctccc	787
Ser Leu Asp Arg *	
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1 5 10 15	
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Ala Asn Leu Gly Ala Glu Cys Leu Arg Met Leu Asp Ser Gly Ala Asp	
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Tyr Leu His Leu Asp Val Met Asp Gly His Phe Val Pro Asn Ile Thr	
33 38 43 48	
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Phe Gly His Pro Val Val Glu Ser Leu Arg Lys Gln Leu Gly Gln Asp	
49 54 59 64	
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Pro Phe Phe Asp Met His Met Met Val Ser Lys Pro Glu Gln Trp Val	
65 70 75 80	
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Lys Pro Met Ala Val Ala Gly Ala Asn Gln Tyr Thr Phe His Leu Glu	
81 86 91 96	

gct act gag aac cca ggg gct ttg att aaa gac att cgg gag aat ggg	396
Ala Thr Glu Asn Pro Gly Ala Leu Ile Lys Asp Ile Arg Glu Asn Gly	
97 102 107 112	
atg aag tct tgc tct gtc acc cag gct gaa gtg cag tgg cac agt cag	444
Met Lys Ser Cys Ser Val Thr Gln Ala Glu Val Gln Trp His Ser Gln	
113 118 123 128	
ggc cca ttg cag gtt ggc ctt gcc atc aaa cca gga acc tca gtt gag	492
Gly Pro Leu Gln Val Gly Leu Ala Ile Lys Pro Gly Thr Ser Val Glu	
129 134 139 144	
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Tyr Leu Ala Pro Trp Ala Asn Gln Ile Asp Met Ala Leu Val Met Thr	
145 150 155 160	
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Val Glu Pro Gly Phe Gly Gly Gln Lys Phe Met Glu Asp Met Met Pro	
161 166 171 176	
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Lys Val His Trp Leu Arg Thr Gln Phe Pro Ser Leu Asp Ile Glu Val	
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Asp Gly Gly Val Gly Pro Asp Thr Val His Lys Cys Ala Glu Ala Gly	
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gct aac atg att gtg tct ggc agt gct att atg agg agt gaa gac ccc	732
Ala Asn Met Ile Val Ser Gly Ser Ala Ile Met Arg Ser Glu Asp Pro	
209 214 219 224	
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Arg Ser Val Ile Asn Leu Leu Arg Asn Val Cys Ser Glu Ala Ala Gln	
225 230 235 240	
aaa cgt tct ctt gat cgg tga aa ccataaggag cccagtgttc ctgttcatga	833
Lys Arg Ser Leu Asp Arg *	
241 246	
aatctccott ttactggaaa acaggaatat tgactaccaa atcacaatgc aattgaagcc	893
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<222> (108) .. (1856)

<400> 619

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                                     Met Ile Ser
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aga tac act cgg aag gcg gtg cca cag agc ttg gag ctg aaa gga ata      164
Arg Tyr Thr Arg Lys Ala Val Pro Gln Ser Leu Glu Leu Lys Gly Ile
  4                               9                               14                               19

aca aaa cat gct ctt aac cat cat ccc cct cca gag123 aag ctg gag gaa      212
Thr Lys His Ala Leu Asn His His Pro Pro Pro Glu Lys Leu Glu Glu
  20                               25                               30                               35

att tcc ccc acc agt gac agt cat gag aaa gac aca agt tcc caa agc      260
Ile Ser Pro Thr Ser Asp Ser His Glu Lys Asp Thr Ser Ser Gln Ser
  36                               41                               46                               51

aag tct gac atc aca aga gaa tca tct ttt aca tca gcc gac act ggg      308
Lys Ser Asp Ile Thr Arg Glu Ser Ser Phe Thr Ser Ala Asp Thr Gly
  52                               57                               62                               67

aat tca ctg tct gct ttt cca agt tat aca ggc gca ggg ata tct act      356
Asn Ser Leu Ser Ala Phe Pro Ser Tyr Thr Gly Ala Gly Ile Ser Thr
  68                               73                               78                               83

gaa gga agc tcg gac ttc tcc tgg gga tat ggt gaa ctc gat caa aat      404
Glu Gly Ser Ser Asp Phe Ser Trp Gly Tyr Gly Glu Leu Asp Gln Asn
  84                               89                               94                               99

gcc act gaa aaa gtc cag aca atg ttc aca gcc att gat gaa ctc ttg      452
Ala Thr Glu Lys Val Gln Thr Met Phe Thr Ala Ile Asp Glu Leu Leu
  100                               105                               110                               115

tat gag cag aag ttg agt gtg cat acc aag agt cta caa gaa gag tgc      500
Tyr Glu Gln Lys Leu Ser Val His Thr Lys Ser Leu Gln Glu Glu Cys
  116                               121                               126                               131

caa cag tgg aca gct agc ttt cct cac ctc agg att cta ggt agg cag      548
Gln Gln Trp Thr Ala Ser Phe Pro His Leu Arg Ile Leu Gly Arg Gln
  132                               137                               142                               147

ata atc act cca agt gaa ggt tat aga ttg tat cct aga tcc cct tct      596
Ile Ile Thr Pro Ser Glu Gly Tyr Arg Leu Tyr Pro Arg Ser Pro Ser
  148                               153                               158                               163

gct gtt tcc gct tca tat gaa aca acc ttg tct caa gaa aga gat tct      644
Ala Val Ser Ala Ser Tyr Glu Thr Thr Leu Ser Gln Glu Arg Asp Ser
  164                               169                               174                               179

act ata ttt ggt ata agg gga aag aag tta cat ttt tca tct tct tat      692
Thr Ile Phe Gly Ile Arg Gly Lys Lys Leu His Phe Ser Ser Ser Tyr
  180                               185                               190                               195
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gct cat aaa gca tct tcc att gcc aaa tcc tcc agc ttt tgt tct atg	740
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196 201 206 211	
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Glu Arg Asp Glu Glu Asp Ser Ile Ile Val Ser Glu Gly Ile Ile Glu	
212 217 222 227	
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Glu Tyr Leu Ala Phe Asp His Ile Asp Ile Glu Glu Gly Phe His Gly	
228 233 238 243	
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Lys Lys Ser Glu Ala Ala Thr Glu Lys Gln Lys Leu Gly Tyr Pro Pro	
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Ile Ala Pro Phe Tyr Cys Met Lys Glu Asp Val Leu Ala Tyr Val Phe	
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Asp Ser Val Trp Cys Lys Val Val Ser Cys Met Glu Gln Leu Thr Arg	
276 281 286 291	
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Ser His Trp Glu Gly Phe Ala Ser Asp Asp Glu Ser Asn Val Ala Val	
292 297 302 307	
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Thr Arg Pro Asp Ser Glu Ser Ser Cys Val Leu Ser Glu Leu His Pro	
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Leu Val Leu Pro Arg Val Pro Gln Ser Lys Val Leu Tyr Ile Thr Ser	
324 329 334 339	
aat ccg atg agt ctc tgt caa gca agc aga cat cag cca aat gtg aat	1172
Asn Pro Met Ser Leu Cys Gln Ala Ser Arg His Gln Pro Asn Val Asn	
340 345 350 355	
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Asp Leu Leu Val His Gly Met Pro Leu Gln Pro Arg Asn Leu Ser Leu	
356 361 366 371	
atg gac aag ctc cta gat ctt gat gac aag cta ctt atg agg cct ggg	1268
Met Asp Lys Leu Leu Asp Leu Asp Asp Lys Leu Leu Met Arg Pro Gly	
372 377 382 387	
tcc agt acc atc ctt tca act cga aat tgg cca aat cga gct gtg gag	1316
Ser Ser Thr Ile Leu Ser Thr Arg Asn Trp Pro Asn Arg Ala Val Glu	
388 393 398 403	
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Phe Ser Thr Ser Ser Leu Ser Tyr Thr Val Gln Ser Thr Arg Arg Arg	
404 409 414 419	
aat cca cca cca cga act ctt cat ccg atc agc acg agc cat tca tgt	1412

Asn Pro Pro Pro Arg Thr Leu His Pro Ile Ser Thr Ser His Ser Cys	
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Ala Glu Thr Pro Arg Ser Val Glu Glu Ile Leu Arg Gly Ala Arg Val	
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Pro Val Ala Pro Asp Ser Leu Ser Ser Pro Ser Pro Thr Pro Leu Ser	
452 457 462 467	
cga aat aat ctg cta cca cct att ggc aca gct gaa gtg gaa cat gtg	1556
Arg Asn Asn Leu Leu Pro Pro Ile Gly Thr Ala Glu Val Glu His Val	
468 473 478 483	
agc act gtg ggg cca caa aga cag atg aaa ccc cat ggc gac tct agt	1604
Ser Thr Val Gly Pro Gln Arg Gln Met Lys Pro His Gly Asp Ser Ser	
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Arg Ala Gln Ser Ala Val Val Asp Glu Pro Asn Tyr Gln Gln Pro Gln	
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Glu Arg Leu Leu Leu Pro Asp Phe Phe Pro Arg Pro Asn Thr Thr Gln	
516 521 526 531	
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Ser Phe Leu Leu Asp Thr Gln Tyr Arg Arg Ser Cys Ala Val Glu Tyr	
532 537 542 547	
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Pro His Gln Ala Arg Pro Gly Arg Gly Ser Ala Gly Pro Gln Leu His	
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564 569 574 579	
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Gln Gly Pro *	
580	
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catacacaaa aagcagcaaa tcatcagtga caatatcact ggcttcagaa tacttcagcc	2259
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<213> Homo sapiens

<220>

<221> CDS

<222> (43)..(1161)

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Ala Ser Ala Arg Thr Pro Ala Gly Lys Arg Val Ile Asn Gln Glu Glu  
5 10 15 20

ttg cgg cgg tta atg aag gag aag cag cgt ctg agc acc agt cgg aaa 150  
Leu Arg Arg Leu Met Lys Glu Lys Gln Arg Leu Ser Thr Ser Arg Lys  
21 26 31 36

cgg ata gaa tct cca ttc gcg aag tac aac cgt ttg ggg cag ctg agt 198  
Arg Ile Glu Ser Pro Phe Ala Lys Tyr Asn Arg Leu Gly Gln Leu Ser  
37 42 47 52

tgt gcc ctg tgt aac act ccg gtt aag agc gag ctc ctg tgg cag act 246  
Cys Ala Leu Cys Asn Thr Pro Val Lys Ser Glu Leu Leu Trp Gln Thr  
53 58 63 68

cac gtc ctg gga aag cag cac cga gag aaa gtg gcc gag ctg aaa ggc 294  
His Val Leu Gly Lys Gln His Arg Glu Lys Val Ala Glu Leu Lys Gly  
69 74 79 84

gcg aag gaa gcc agc cag ggt tgc tcc gcc agt tca gcg cct cag tcc 342  
Ala Lys Glu Ala Ser Gln Gly Ser Ser Ala Ser Ser Ala Pro Gln Ser  
85 90 95 100

gtc aag agg aaa gcg ccg gac gca gac gac caa gat gtc aag aga gcg 390  
Val Lys Arg Lys Ala Pro Asp Ala Asp Asp Gln Asp Val Lys Arg Ala  
101 106 111 116

aag gcc acc ttg gtg cct cag gta cag ccc tcc aca tct gcg tgg acc 438  
Lys Ala Thr Leu Val Pro Gln Val Gln Pro Ser Thr Ser Ala Trp Thr  
117 122 127 132

acc aac ttt gac aaa ata gga aag gag ttc att aga gcg act ccc agt 486  
Thr Asn Phe Asp Lys Ile Gly Lys Glu Phe Ile Arg Ala Thr Pro Ser  
133 138 143 148

aag cct tca gga ctc agt tta ctc ccc gat tat gaa gat gag gag gag 534  
Lys Pro Ser Gly Leu Ser Leu Leu Pro Asp Tyr Glu Asp Glu Glu Glu  
149 154 159 164

gag gaa gag gag gag gaa gga gat gga gaa aga aaa agg ggg gac gcc 582  
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165 170 175 180

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Ser Lys Pro Leu Ser Asp Ala Gln Gly Lys Glu His Ser Val Ser Ser

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197	202	207	212	
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Asn Pro Pro Lys Ala	Pro Ile Ile Pro His	Ser Gly Ser Ile Glu Lys		
213	218	223	228	
gca gaa ata cat gaa	aaa gtg gtg gaa agg	aga gaa aac acc gcg gaa		774
Ala Glu Ile His Glu	Lys Val Val Glu Arg	Arg Glu Asn Thr Ala Glu		
229	234	239	244	
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Ala Leu Pro Glu Gly	Phe Phe Asp Asp Pro	Glu Val Asp Ala Arg Val		
245	250	255	260	
cga aag gtt gat gct	cca aaa gat cag atg	gac aaa gag tgg gac gaa		870
Arg Lys Val Asp Ala	Pro Lys Asp Gln Met	Asp Lys Glu Trp Asp Glu		
261	266	271	276	
ttc caa aaa gcc atg	agg cag gtc aac act	att tcc gaa gcc ata gtt		918
Phe Gln Lys Ala Met	Arg Gln Val Asn Thr	Ile Ser Glu Ala Ile Val		
277	282	287	292	
gcc gaa gag gat gag	gag gga cgg ttg gac	cgc cag att ggg gag atc		966
Ala Glu Glu Asp Glu	Glu Gly Arg Leu Asp	Arg Gln Ile Gly Glu Ile		
293	298	303	308	
gat gag cag ata gag	tgt tac cga cgg gtg	gaa aag cta cgg aat cgc		1014
Asp Glu Gln Ile Glu	Cys Tyr Arg Arg Val	Glu Lys Leu Arg Asn Arg		
309	314	319	324	
cag gat gaa ata aaa	aat aaa ctt aaa gaa	atc ctg acc ata aaa gaa		1062
Gln Asp Glu Ile Lys	Asn Lys Leu Lys Glu	Ile Leu Thr Ile Lys Glu		
325	330	335	340	
ctg cag aaa aag gaa	gaa gag aat gct gac	agc gat gat gag ggg gaa		1110
Leu Gln Lys Lys Glu	Glu Glu Asn Ala Asp	Ser Asp Asp Glu Gly Glu		
341	346	351	356	
cta cag gat ttg ttg	tct cag gat tgg agg	gtg aaa ggg gca ttg tta		1158
Leu Gln Asp Leu Leu	Ser Gln Asp Trp Arg	Val Lys Gly Ala Leu Leu		
357	362	367	372	
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ttccacgaca gacttaactg	tataatttcg ttgtaaaatc	tgtaagttgt aaatattgta		1455

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gcgcggcggg ctccaggcga ggcggtcgac gtcctgaaa acttgcgcg gcgctcgcg 240  
cactgcgccc ggagcg atg aag atg gtc gcg ccc tgg acg cgg ttc tac 289  
Met Lys Met Val Ala Pro Trp Thr Arg Phe Tyr  
1 5  
tcc aac agc tgc tgc ttg tgc tgc cat gtc cgc acc ggc acc atc ctg 337  
Ser Asn Ser Cys Cys Leu Cys Cys His Val Arg Thr Gly Thr Ile Leu  
12 17 22 27  
ctc ggc gtc tgg tat ctg atc atc aat gct gtg gta ctg ttg att tta 385  
Leu Gly Val Trp Tyr Leu Ile Ile Asn Ala Val Val Leu Leu Ile Leu  
28 33 38 43  
ttg agt gcc ctg gct gat ccg gat cag tat aac ttt tca agt tct gaa 433  
Leu Ser Ala Leu Ala Asp Pro Asp Gln Tyr Asn Phe Ser Ser Ser Glu  
44 49 54 59  
ctg gga ggt gac ttt gag ttc atg gat gat gcc aac atg tgc att gcc 481  
Leu Gly Gly Asp Phe Glu Phe Met Asp Asp Ala Asn Met Cys Ile Ala  
60 65 70 75  
att gcg att tct ctt ctc atg atc ctg ata tgt gct atg gct act tac 529  
Ile Ala Ile Ser Leu Leu Met Ile Leu Ile Cys Ala Met Ala Thr Tyr  
76 81 86 91  
gga gcg tac aag caa cgc gca gcc tgg atc atc cca ttc ttc tgt tac 577  
Gly Ala Tyr Lys Gln Arg Ala Ala Trp Ile Ile Pro Phe Phe Cys Tyr  
92 97 102 107  
cag atc ttt gac ttt gcc ctg aac /atg ttg gtt gca atc act gtg ctt 625  
Gln Ile Phe Asp Phe Ala Leu Asn Met Leu Val Ala Ile Thr Val Leu  
108 113 118 123

att tat cca aac tcc att cag gaa tac ata cgg caa ctg cct cct aat	673
Ile Tyr Pro Asn Ser Ile Gln Glu Tyr Ile Arg Gln Leu Pro Pro Asn	
124 129 134 139	
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Phe Pro Tyr Arg Asp Asp Val Met Ser Val Asn Pro Thr Cys Leu Val	
140 145 150 155	
ctt att att ctt ctg ttt att agc att atc ttg act ttt aag ggt tac	769
Leu Ile Ile Leu Leu Phe Ile Ser Ile Ile Leu Thr Phe Lys Gly Tyr	
156 161 166 171	
ttg att agc tgt gtt tgg aac tgc tac cga tac atc aat ggt agg aac	817
Leu Ile Ser Cys Val Trp Asn Cys Tyr Arg Tyr Ile Asn Gly Arg Asn	
172 177 182 187	
tcc tct gat gtc ctg gtt tat gtt acc agc aat gac act acg gtg ctg	865
Ser Ser Asp Val Leu Val Tyr Val Thr Ser Asn Asp Thr Thr Val Leu	
188 193 198 203	
cta ccc ccg tat gat gat gcc act gtg aat ggt gct gcc aag gag cca	913
Leu Pro Pro Tyr Asp Asp Ala Thr Val Asn Gly Ala Ala Lys Glu Pro	
204 209 214 219	
ccg cca cct tac gtg tct gcc taa gccttcaagt gggcggagct gagggcagca	967
Pro Pro Pro Tyr Val Ser Ala *	
220 225	
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                        Met Lys Gly Met Lys Val Glu Val Leu Asn
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agt gat gct gtg ctc ccc agc cgg gtg tac tgg atc gcc tct gtc atc 340
Ser Asp Ala Val Leu Pro Ser Arg Val Tyr Trp Ile Ala Ser Val Ile
 11             16             21             26

cag aca gca ggg tat cgg gtg ctg ctt cgg tat gaa ggc ttt gaa aat 388
Gln Thr Ala Gly Tyr Arg Val Leu Leu Arg Tyr Glu Gly Phe Glu Asn
 27             32             37             42

gac gcc agc cat gac ttc tgg tgc aac ctg gga aca gtg gat gtc cac 436
Asp Ala Ser His Asp Phe Trp Cys Asn Leu Gly Thr Val Asp Val His
 43             48             53             58

ccc att ggc tgg tgt gcc atc aac agc aag atc cta gtg ccc cca cgg 484
Pro Ile Gly Trp Cys Ala Ile Asn Ser Lys Ile Leu Val Pro Pro Arg

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Leu Val Gly Ser Arg Thr Leu Pro Val Asp Phe His Ile Lys Met Val				
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gag agc atg aag tac ccc ttt agg cag ggc atg cgg ctg gaa gtg gtg				628
Glu Ser Met Lys Tyr Pro Phe Arg Gln Gly Met Arg Leu Glu Val Val				
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gac aag tcc cag gtg tca cgc act cgc atg gct gtg gtg gac aca gta				676
Asp Lys Ser Gln Val Ser Arg Thr Arg Met Ala Val Val Asp Thr Val				
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Ile Gly Gly Arg Leu Arg Leu Leu Tyr Glu Asp Gly Asp Ser Asp Asp				
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Met Ala His His Pro Thr Phe Arg Lys Ile Tyr Cys Asp Ala Val Pro				
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Glu Glu Gly Met Lys Leu Glu Ala Ile Asp Pro Leu Asn Leu Gly Asn				
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tac cat gcc tct tcc cac gcc atc ttc ccg gcc acc ttc tgt cag aag				1108
Tyr His Ala Ser Ser His Ala Ile Phe Pro Ala Thr Phe Cys Gln Lys				
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aat gac att gag ctc aca ccg cca aaa ggt tat gag gca cag act ttc				1156
Asn Asp Ile Glu Leu Thr Pro Pro Lys Gly Tyr Glu Ala Gln Thr Phe				
283	288	293	298	

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Arg Leu Phe Asn Met Asp Cys Pro Asn His Gly Phe Lys Val Gly Met	
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Thr Val Lys Arg Val Val His Arg Leu Leu Ser Ile His Phe Asp Gly	
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Lys Lys Lys Lys Gln Phe Gly Lys Lys Arg Lys Arg Ile Pro Pro Thr	
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Lys Thr Arg Pro Leu Arg Gln Gly Ser Lys Lys Pro Leu Leu Glu Asp	
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Gln Glu Thr Asp Asp *	
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aggcgtccgc tggatacctt ccccttccc tgacctagag ctctacagct gctgectcgg 240
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1 5 10

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Val Ser Val Thr Val Phe Val Trp Ser Cys Cys His Gln Gln Ala Glu	
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Lys Lys His Lys Asn Pro Pro Tyr Lys Phe Ile His Met Leu Lys Gly	
46 51 56 61	
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Leu Leu Val Asp Ala Ala Glu Ala Gly Leu Leu Ser Arg Asp Lys Asp	
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Gly Glu Ser Lys Thr Thr Ser Pro Ser Ser Pro Glu Glu Asp Val Met	
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